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THESIS

**SYSTEM OF SYSTEMS ANALYSIS OF THE GLOBAL
PEACE OPERATIONS INITIATIVE IN U.S. SOUTHERN
COMMAND**

by

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June 2014

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**SYSTEM OF SYSTEMS ANALYSIS OF THE GLOBAL PEACE OPERATIONS
INITIATIVE IN U.S. SOUTHERN COMMAND**

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Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

In order to improve the operational assessments process of Global Peace Operations Initiative (GPOI) in U.S. Southern Command, this thesis provides a system of systems analysis of the GPOI program. Using systems of systems engineering concepts described by the U.S. Department of Defense and following a systems of systems engineering and integration process model, an operational architecture of GPOI as a system of systems is developed from an analysis of stakeholders, an exploration of the operational concept, an examination of capabilities, a creation of event and interaction models, and an evaluation of governance. The architecture is used to identify friction points and recommend improvements in both process and organization of GPOI. This thesis serves as a foundation for providing appropriate metrics for an effective operational assessment of the GPOI program to a decision maker.

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LIST OF ACRONYMS AND ABBREVIATIONS

AOR	area of operations
CCP	country coordination plan
CJCS	Chairman of the Joint Chiefs of Staff
COCOM	combatant command
COESPU	Center of Excellence for Stability Police Units
DOD	Department of Defense
DOS	Department of State
FPU	formed police unit
FTC	full training capability
GPOI	Global Peace Operations Initiative
G8	Group of Eight
ICS	integrated country strategy
IMO	intermediate military objective
INCOSE	International Council on Systems Engineering
JCS	Joint Chiefs of Staff
JP	joint publication
JRS	joint regional strategy
MOE	measure of effectiveness
MOP	measure of performance
NDS	national defense strategy
NMS	national military strategy
NSS	national security strategy
OSD	Office of the Secretary of Defense
OSD(P)	Office of the Secretary of Defense/Undersecretary of Defense for Policy
PN	partner nation
QDDR	quadrennial diplomacy and development review
SCO	security cooperation organization
SE	systems engineering
SoS	system(s) of systems

TCP	theater campaign plan
UN	United Nations
UNDPKO	United Nations Department of Peacekeeping Operations
USG	United States government
USMILGP	United States military group
USSOUTHCOM	United States Southern Command

EXECUTIVE SUMMARY

During a visit to the Naval Postgraduate School in July 2013, U.S. Southern Command's (USSOUTHCOM) Global Peace Operations Initiative (GPOI) manager, under the Theater Engagement Directorate, presented ongoing challenges and opportunities to improve the operational assessments process of GPOI. According to his briefing, recent United Nations peace operations deployments have demonstrated mixed results from the current GPOI assessment process (Yorio 2013). The training assessments results did not correspond to deployment performance, the metrics collected in the assessments were not linked to the high level GPOI program objectives, and the assessments did not accurately inform decision makers of the true status of partner nation peacekeeping forces and their capabilities. As part of a series of ongoing research at Naval Postgraduate School, this thesis decomposes GPOI into a system of systems model and thoroughly examines the behavior of constituent systems and relationship dynamics between constituent systems. This analysis highlights important characteristics within the GPOI system of systems which are used to identify friction points and recommendations that give insight to a decision maker as to effective and appropriate metrics to collect for assessment.

In order to improve the operational assessments process for the GPOI program in USSOUTHCOM, this thesis provides a system of systems analysis of the GPOI program by applying a system of systems engineering approach. One of the first steps to conducting an effective assessment is to fully understanding the system in its operational environment (U.S. Joint Chiefs of Staff [JCS] 2011c). Only through a thorough examination of systems, components, and the operating environment with a focus on the relationships between systems can a truly effective assessment be conducted. Utilizing the concepts described in the Department of Defense's *Systems Engineering Guide for Systems of Systems* and following a system of systems engineering and integration process model, an operational architecture of the GPOI program within USSOUTHCOM is developed from a stakeholder analysis, operational concept examination, capabilities analysis, event and interaction model creation, and governance analysis.

An analysis of the major stakeholders and their respective views, the first part to understanding the system in its environment, reveals the complexity within the problem. The major stakeholders identified in the GPOI program are the Department of State, the Department of Defense, and the partner nation. External to GPOI are other major stakeholders including the U.S. Congress and the United Nations. The stakeholders view the GPOI program through slightly different lenses, ultimately shaping their desires, goals, and expectations.

From the stakeholder analysis, an operational concept is ascertained with the major stakeholders acting as constituent systems within a system of systems. The operational concept then serves as the motivation behind the capability analysis. The desired end-state capability of the GPOI program as a system of systems is the foundation for the architecture development. The operational architecture is explained through the use of event models, which describe the behavior of each system, and interactions models, which show the physical and informational exchanges between the systems. From these behavior and relationship models, GPOI is revealed to have characteristics of both an acknowledged and collaborative type system of systems. The characteristics used for governance analysis of GPOI as a system of systems are autonomy, belonging, connectivity, diversity, and emergence (Jamshidi 2009).

The application of systems of systems engineering to Global Peace Operations Initiative (GPOI) provides a better understanding of the program from a holistic systems view. Each stakeholder acts as a system operating within the GPOI system of systems to create a new capability of enhanced international peace operations capacity by partner nations. Based on the system of systems operational architecture models and an analysis of the interactions between systems in GPOI, the thesis determined that a systems analysis of GPOI as a system of systems may both improve and enhance the operations assessment process of GPOI through an understanding of the behaviors of the constituent systems and the interactions between constituent systems within the system of systems.

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- U.S. Joint Chiefs of Staff. 2011. Joint Publication 5-0: Joint Operation Planning. Washington, DC: Government Printing Office.
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I. INTRODUCTION

UN peacekeeping can deliver important results by protecting civilians, helping to rebuild security, and advancing peace around the world.... Over the last ten years, the demands on peacekeeping have grown, and operations have become more complex. It is in all of our interests to improve the efficiency and effectiveness of these efforts.

—President Barack Obama, 2009

A. BACKGROUND

The United Nations was established in 1945 to “save succeeding generations from the scourge of war” (United Nations 1945). A primary role of the United Nations is to conduct operations to maintain peace and security. Seven decades later, peacekeeping has become increasingly complex and multi-dimensional, requiring support and commitment from the far corners of the world. In 2005, the United States established the Global Peace Operations Initiative (GPOI), a government-funded program to support peacekeeping capabilities of select partner nations, in order to increase the regional stability around these partner nations and improve political and military relations with these partner nations. The intent of the GPOI program is to develop international peacekeeping capacity through building the capability of partner nations to conduct United Nations peace operations.

United States joint doctrine defines a broad spectrum of military operations. Peace operations training of partner nations through the GPOI program fall under the category of Military Engagement, Security Cooperation, and Deterrence (U.S. Joint Chiefs of Staff [JCS] 2011a). There are five defined activities in peace operations (JCS 2012):

- Peacekeeping
- Peace enforcement
- Peacebuilding
- Peacemaking
- Conflict prevention

The United States monitors, evaluates, and assesses the GPOI program to determine the effectiveness of all GPOI-related activities of a partner nation. Typically at the geographic combatant command (COCOM) level, a regional GPOI manager and assessments team consider several factors regarding the level of peace operations capability of a partner nation. These factors currently include the partner nation's actual peace operations deployments, the effectiveness of the partner nation in peace operations, the contributions of the partner nation to peacekeeping capabilities, and effectiveness of the partner nation's self-training ability (Department of State [DOS] 2013b). Metrics regarding peace operations training and training infrastructure are aggregated and compiled annually. The level of United States financial support provided is based on these annual assessments of each partner nation's progress toward developing a self-sustained peace operations training capability.

Joint Publication 5-0 defines assessment as "the continuous monitoring and evaluation of the current situation and progress... toward mission accomplishment" (JCS 2011c). Assessments should seek to answer the two fundamental questions: "Are we doing things right?" and "Are we doing the right things?" in order to assist a decision maker in making the most effective decisions toward the desired end state. Measures of performance (MOP) answer the former question; measures of effectiveness (MOE) answer the latter. The purpose of assessments is to support the commander's decision-making ability by providing the current state of affairs and progress toward desired objectives (JCS 2011c). First, the assessments process begins with continuous monitoring of operations. Then, operations are compared against MOEs and MOPs in order to determine progress toward intermediate and ultimate objectives. Finally, changes are incorporated to improve progress toward the end state (JCS 2011c).

B. PURPOSE

During a visit to the Naval Postgraduate School, the COCOM GPOI manager (SCJ733) under the U.S. Southern Command's Theater Engagement Directorate presented ongoing challenges and opportunities to improve the GPOI assessments process. According to his briefing, recent United Nations peace operations deployments

have shown that the current GPOI assessment process has produced mixed results and the assessments have failed to link the metrics collected to the program objectives. Additionally, the metrics collected did not accurately inform decision makers in both the Department of State and Department of Defense of the status of peacekeeping forces and capabilities in each partner nation (Yorio 2014).

In order to improve the operational assessments process of GPOI in U.S. Southern Command, this thesis provides a system of systems analysis of the GPOI program by applying a systems engineering approach towards understanding GPOI. One of the first steps to conducting an effective assessment is to fully understanding the system in its environment. Only through a thorough examination of systems, components, and the operating environment with a focus on the relationships between systems can a truly effective assessment be conducted. Joint Publication 5-0 (JCS 2011c, III-9) prescribes an “analytical framework to analyze the operational environment and determine relevant and critical relationships between the various actors and aspects of the operational environment.” Illustrated in Figure 1, GPOI in its operational environment will be analyzed to determine relevant and critical relationships between stakeholders.

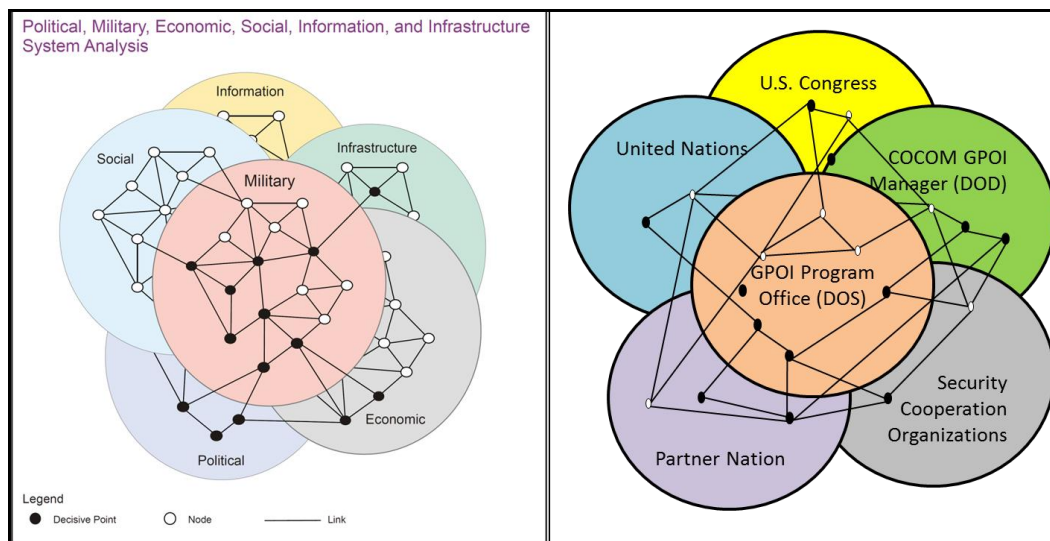


Figure 1. Theoretical Systems Analysis Diagram (after JCS 2011c, III-9)

As part of a series of ongoing research at Naval Postgraduate School, this thesis decomposes GPOI into a system of systems and thoroughly examines the behavior and relationship dynamics between systems. This analysis highlights important characteristics within the GPOI system which may be used to provide insight into appropriate metrics to collect for assessment in order to support the decision maker.

C. RESEARCH QUESTIONS

This thesis addresses the following primary research question:

- Can the development of a model of the Global Peace Operations Initiative as a system of systems improve or enhance the operations assessment process of GPOI?

In order to answer the primary research question, the following secondary research questions are first addressed:

- What does GPOI as a system of systems model reveal about the current GPOI assessments process?
- What system of systems characteristics may improve or enhance GPOI?

D. SCOPE

A site visit to U.S. Southern Command's headquarters proved invaluable in scoping and bounding this research. While GPOI is a world-wide program operating in nearly every U.S. geographic COCOM, this thesis focuses on two areas of concern. The first focus is the partner nation's peace operations capability with respect to GPOI activities within U.S. Southern Command's area of operations. GPOI in other COCOMs may operate differently. While much of the day-to-day activities of GPOI are conducted at a tactical level by a security cooperation organization, or military group, within the partner nation, the COCOM level GPOI manager fills the operational level role and critical link between the strategic and tactical levels. The second focus is the deployment process in which the partner nation is selected to deploy a contingent of peacekeepers to a United Nations peace operation.

E. METHODOLOGY

This project utilizes the systems engineering concepts described by the Department of Defense's *Systems Engineering Guide for Systems of Systems*. Following a system of systems engineering and integration process model, an operational architecture model of the GPOI program within U.S. Southern Command program is developed through an operational concept, capabilities analysis, event models characterizing system behaviors, and interaction models characterizing relationships between systems. From an analysis of the relationships, both governance and points of friction are examined and corresponding improvements to the current GPOI program are recommended.

F. ORGANIZATION

Chapter II discusses the history and structure of the GPOI program with further specifics on U.S. Southern Command's approach to GPOI. Chapter III describes systems concepts and systems of systems engineering. Chapter IV is the focus of this thesis, as it describes GPOI as a system of systems and develops a basic operational architecture, from which governance and friction points are examined. Chapter V presents conclusions, recommendations, and future research opportunities.

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II. GLOBAL PEACE OPERATIONS INITIATIVE

This chapter reviews the Global Peace Operations Initiative (GPOI) from its inception to its current state. The history, purpose, and objectives are introduced along with a closer look at the management, assessment processes, and the assessments documents themselves. The background information provided in this chapter is used in exploring the problem space, designating boundaries, and scoping the problem.

A. GPOI PROGRAM

1. Inception

In 2000, the United Nations, recognizing increasing gaps in the international community's ability to effectively conduct peace operations, highlighted a need for greater commitment to international peace and security in the *Report of the Panel on United Nations Peace Operations*, also known as the Brahimi Report (United Nations Department of Peacekeeping Operations 2000). Four years later, the Group of Eight pledged to support international peace operations and issued the *G8 Action Plan for Expanding Global Capability for Peace Support Operations*. In the report, they acknowledged the “growing number of complex peace support operations around the world” as well as the “lack of well-trained and equipped units able to respond to increased demands” (White House, Office of the Press Secretary 2004). In response to this plan, the United States created the GPOI program.

The GPOI program, which began in 2005 as a short-term plan to increase the international participation in peace operations, was initially proposed by the members of the Department of Defense Office of Special Operations and Low-Intensity Conflict and the Department of State as an expansion of peacekeeping training programs in Africa (Serafino 2009). The program would enhance the capacity of the international community to conduct both United Nations and regional peace operations through three objectives (DOS 2013b, 1-1):

- Building partner country capabilities to train and sustain peacekeeping proficiencies;

- Increasing the number of capable military troops and formed police units (FPUs) available for deployment; and
- Facilitating the preparation, logistical support, and deployment of military units and FPUs to peace operations.

The GPOI program involves a close working relationship between the U.S. Department of State and the U.S. Department of Defense. Program funding and oversight are managed by the State department; program activities are developed and implemented through coordination between both State and Defense departments. Geographic COCOMs work with the State department regional bureaus to develop program plans for training and equipping partner nations.

With the completion of the initial five-year mandate in 2010, the GPOI program was extended for a second five-year term, labeled Phase II. The purpose of Phase I was the direct training of partner nations; the intent of Phase II was to build each partner nation's capability of self-sufficient training.

2. GPOI Phase I

Phase I encompassed the initial five years of the GPOI mandate, from 2005 through 2009. The primary focus of GPOI Phase I was to increase the number of trained peacekeepers to conduct peace operations. Phase I included the following seven objectives (DOS 2013a):

- Train and, as appropriate, equip at least 75,000 peacekeepers by 2010, with an emphasis on Africa;
- Enhance regional capacities and support institution building;
- Support the G8 Africa Clearinghouse and establish a G8+ Global Peace Support Operations Capacity Building Clearinghouse;
- Support the development of a G8 Transportation and Logistics Support Arrangement;
- Develop a cached/deployment equipment program;
- Support Italy's Center of Excellence for Stability Police Units (COESPU); and
- Conduct self-sufficiency and sustainment efforts in support of all activities listed above.

GPOI Phase I exceeded several of these objectives, including the training and equipping of 87,000 peacekeepers from 78 different countries and over 2,000 FPU's from 29 countries (DOS 2013a). Because of this, the program was extended into Phase II.

3. GPOI Phase II

The success of Phase I led to the program's five-year extension, or Phase II. The primary focus of this phase was to assist each partner nation in building a self-sufficient and sustainable capability to train and conduct peace operations. The following six objectives guided Phase II (DOS 2013a):

- In coordination with other U.S. government, international community, and national efforts, assist partner countries to establish and strengthen the institutional infrastructure required to achieve and sustain self-sufficient capability to conduct peace operations training;
- Through GPOI-facilitated activities, continue to train peacekeepers worldwide with an emphasis on train-the-trainer instruction;
- In coordination with other U.S. government and international community efforts, provide support to deploying units to address partner countries' capacity shortfalls;
- Enhance the capacity of regional/sub-regional organizations and institutions to train for, plan, deploy, manage, sustain, and obtain and integrate lessons learned from peace operations;
- Enhance efforts to establish and strengthen the institutional infrastructure and doctrinal framework required to train, equip, and deploy FPU's; and
- Support the continuation and enhancement of multilateral approaches and partnerships to coordinate peace operations capacity building efforts.

The purpose of Phase II was to achieve Full Training Capability (FTC) status for GPOI partner nations. This meant that the partner nation was capable of conducting self-sustained training of peacekeeping forces without the assistance of GPOI funds. Progress toward FTC is tracked by annual and monthly assessments by the GPOI Metrics and Evaluation Team. Self-sufficiency in peace operations training is based on the following seven capabilities and verified by an official U.S. government assessment (DOS 2013b, O-5):

- The existence of a dedicated trainer cadre, assigned to a national training center;

- The trainer cadre is trained and resourced to conduct individual training courses, staff training, and unit training for an infantry battalion—or the type of unit the partner country will predominantly deploy—in accordance with available United Nations training standards at a home base or through mobile training
- Training facilities include classroom space, training areas, adequately furnished and equipped office space with internet connectivity; accommodations to include barracks, restroom facilities, and kitchen facilities; and vehicles to support training requirements
- Training is guided by written programs of instruction, ideally available in the country’s dominant national language, which address all peace operations-relevant mission essential tasks
- Appropriate training equipment, aids, and materials are available to facilitate training activities
- A process exists for conducting after-action reviews and integrating lessons learned/best practices into training instruction
- The partner country demonstrates the will and ability to sustain all of the above characteristics

4. GPOI Sustainment Phase

The final phase of GPOI is a sustainment phase. Once GPOI partner nations achieve FTC status, there are incremental reductions in the security assistance funds provided to the partner nation for the purpose of peace operations training or training infrastructure support. It is the responsibility of the partner nation to begin reinvestments of United Nations deployment compensation payments into sustaining or improving their peace operations training and deployment capabilities.

Achieving FTC status does not end GPOI activities within the partner nation. Post-FTC activities are designed to develop additional peacekeeping capabilities identified as “critical enablers” by the United Nations. These are high-demand advanced skills and abilities critical to the success of peace operations, which include aviation, engineering, logistics, and medical capabilities. Achievement of these higher level skills can influence peace deployment negotiations between the partner nations and the United Nations, as these capabilities greatly contribute to the effectiveness of peacekeeping units.

5. GPOI Planning Documents

There are two documents important to the integration of peacekeeping capacity within a region and partner nation. The Joint Regional Strategy (JRS) is a joint plan developed by the Department of State and U.S. Agency for International Development (USAID). This document defines the priority of peacekeeping capacity building within a region and is used for the following three major purposes (DOS 2013b, 1-8):

- Inform budget decisions
- Advise integrated country strategic plans
- Shape performance reviews

Each partner nation develops an Integrated Country Strategy (ICS) document. This is a single multi-year, overarching strategy “that bring together all country-level planning for diplomacy, development, and broader foreign assistance” (DOS 2010, xviii). With the assistance of the U.S. embassies and security cooperation organizations, partner nations prioritize their peacekeeping capacity building objectives in support of the regional strategy for peacekeeping capacity building. This allows the partner nations to decide their own goals toward developing a peacekeeping capability. From the ICS, a Country Cooperation Plan (CCP) is developed. These documents, in conjunction with the Theater Campaign Plan (TCP) developed at the COCOM level, are executed and assessed with the results feeding back into theater strategy. This process is illustrated in Figure 2.

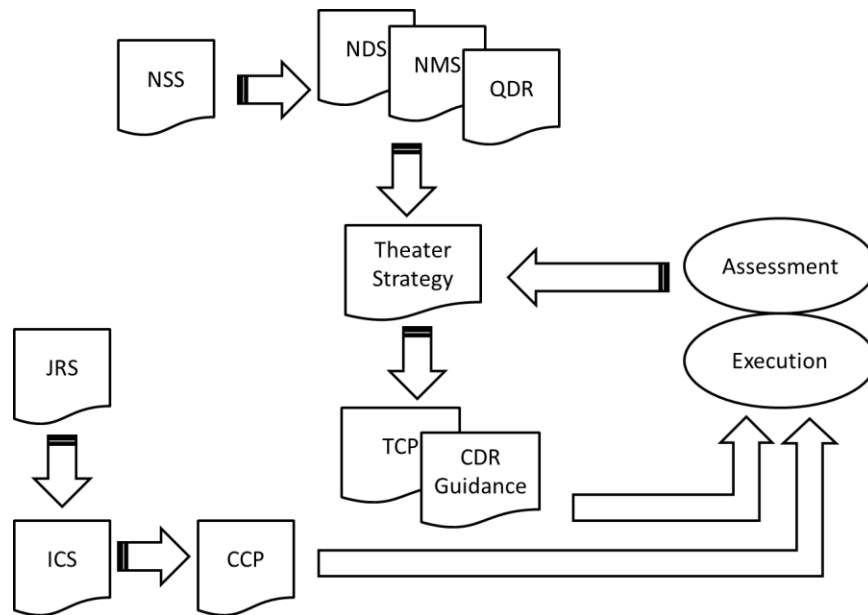


Figure 2. Guiding Documents

6. U.S. GPOI Management

The management structure of GPOI involves both the U.S. Department of State and the U.S. Department of Defense, illustrated in Figure 3. GPOI is managed by a program director, part of the Department of State. The program director answers to U.S. Congress and has overall responsibility over the GPOI program to include budget requests, management of funds, program oversight, and assessments. As GPOI program activities involve close coordination between the State and Defense departments, the program director works with the Office of the Secretary of Defense for Policy/Peacekeeping (DOS 2013b).

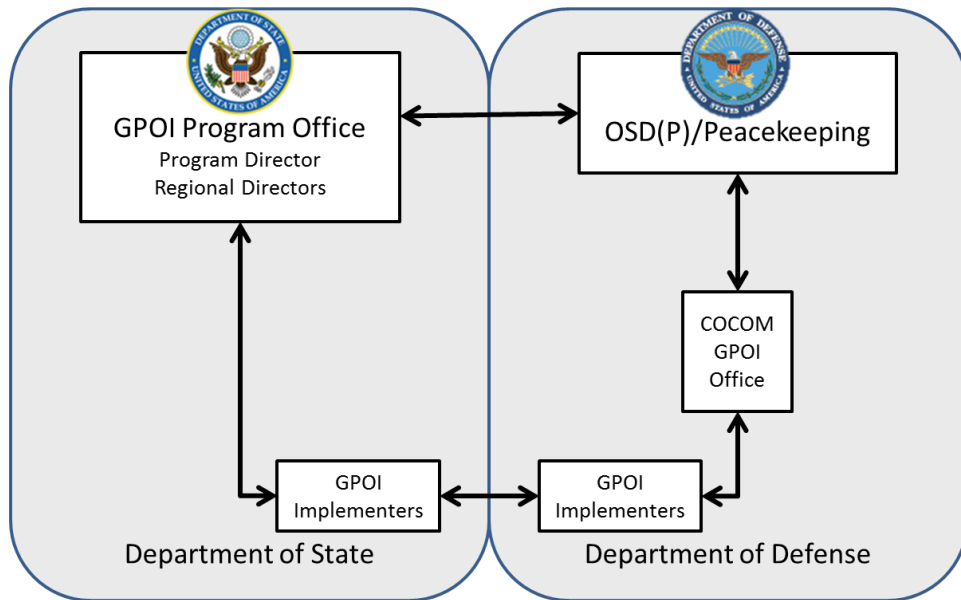


Figure 3. GPOI Management

Under the Department of State, the GPOI program director has three GPOI regional managers, responsible for six regions: (1) Europe, Near East, Western Hemisphere; (2) East Asia and Pacific, South and Central Asia; and (3) Africa. Their equivalents in the Department of Defense are the COCOM-level GPOI managers, one for each geographic COCOM. The COCOM GPOI managers implement regional strategies, coordinate GPOI related activities, and ensure the efficient and effective use of program funds. COCOM GPOI managers also work with their respective combatant commanders (Yorio 2014).

The final level of the GPOI management structure includes the implementers, typically composed of the security cooperation organization, or the U.S. military group (USMILGP) for the partner nation. Residing within the partner nation, the security cooperation organization falls under the combatant commander but works closely with U.S. Diplomats and government officials of the partner nation. Among their many responsibilities, the security cooperation organization executes the day-to-day activities related to the GPOI Program and conducts annual assessments of the partner nation's peace operations training capability. Guidance comes from the COCOM GPOI managers (Yorio 2014).

There are two committees that meet to increase interagency coordination. The GPOI regional committees are comprised of representatives from the Office of the Secretary of Defense for Policy/Peacekeeping, State department GPOI program manager, Defense Security Cooperation Agency regional bureaus, Joint Staff regional offices, and COCOMs. This group focuses on regional strategy plans, monitors progress of regional goals, and addresses issues in finance and management (DOS 2013b). GPOI Coordinating Committee is comprised of high level representatives from the Department of State Bureau of Political-Military Affairs, Office of the Secretary of Defense for Policy, and the Joint Staff. This group focuses on strategy and policy for the overall program (DOS 2013b).

B. GPOI MONITORING AND EVALUATION

The GPOI program office includes a metrics and evaluation team whose sole job is to assess the effectiveness of GPOI related activities. Working closely with COCOM GPOI managers and security cooperation organization, the metrics and evaluation team's five major responsibilities are the following (DOS 2013b, 5-1):

- Compiling and archiving program data
- Conducting program evaluation
- Performing in-depth project assessment
- Identifying lessons learned and best practices
- Reporting program information, data, and analysis

The primary source of data comes from the annual FTC assessments, which examine three categories of GPOI activities within a partner nation. The three major categories are training, facilities, and equipment. A standard FTC training assessment is annually conducted and submitted by the security cooperation organization and routed to the COCOM GPOI manager, and eventually to the GPOI program office metrics and evaluation team. The assessment covers seven criteria, nearly exclusively focused on training infrastructure support (DOS 2013b, O-5):

- National Peace operations training center and cadre
- Cadre resources

- Overall training center infrastructure
- Training support facilities and equipment
- Programs of instruction
- After-action reviews
- Demonstration of the will and ability to sustain FTC

This assessment is used to justify funding for the program. Funds received from U.S. Congress are distributed down to the partner nations. Figure 4 summarizes this process. The first annual assessment conducted on a partner nation sets a baseline with successive assessments monitoring progress against the baseline. Once a partner nation is approaching FTC achievement, an FTC verification process is conducted, which includes the following (DOS 2013b, 5-3):

- Develop consensus on FTC achievement
- Discuss post-FTC status of the partner nation
- Discuss, coordinate, and conduct the partner country's marking and/or announcing achievement of FTC
- Post-FTC verification actions

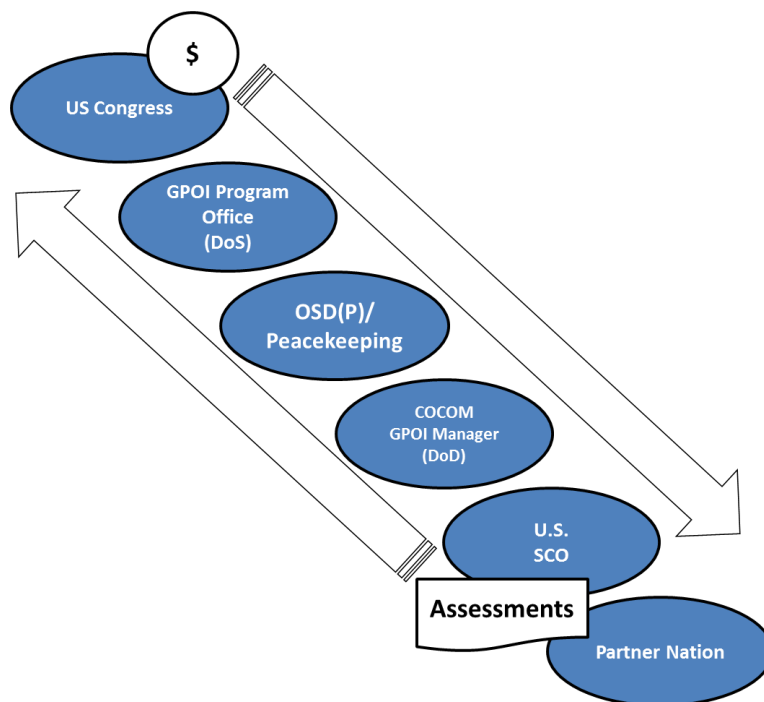


Figure 4. Assessments and Funding Cycle

In addition to the annual FTC training assessment, the metrics and evaluation team collects data reports throughout the year. GPOI training activity reports are collected following direct training events; documentation is stored for any equipment transfers to the partner nation; and reports for indigenous training and deployment activities of the partner nation are compiled and tracked quarterly. From all these reports, progress toward program objectives is monitored and assessed (Yorio 2014). Figure 5 displays a metrics and evaluation team summary of the annual FTC training assessments and the quarterly reports which measures each partner nation's progress toward GPOI program objectives. An example of the current FTC assessment can be found in Appendix A.

Dedicated Trainer Cadre	Trainer Cadre Sufficiently Trained & Resourced	Sufficient Overall Training Center Infrastructure	Sufficient Training Facilities and Equipment	Written Programs of Instruction (POIs)	Process for After-Action Reviews (AARs)	Country Demonstrates Will/Ability to Sustain FTC
5.0	5.0	4.9	4.9	5.0	5.0	4.5
Pending Pending	Pending Pending	Pending Pending	Pending Pending	Pending Pending	Pending Pending	Pending Pending
5.0	3.4	4.3	4.3	3.3	1.8	4.5
4.0	3.9	2.2	3.0	4.7	4.2	4.0
3.5	3.9	2.1	3.4	5.0	2.2	4.0
Pending	Pending	Pending	Pending	Pending	Pending	Pending
4.0	4.9	3.9	4.3	5.0	5.0	3.5
4.0	4.9	2.9	3.0	4.3	2.2	3.0
4.0	4.0	4.1	4.0	5.0	3.7	4.0
3.5	4.6	4.4	3.8	5.0	5.0	4.5
4.0	4.0	4.3	3.1	4.0	4.5	2.0
4.0	4.0	4.1	3.1	4.0	4.5	2.0

Figure 5. FTC Assessments Summary Sample (from Yorio 2014)

C. UNITED STATES SOUTHERN COMMAND GPOI

United States Southern Command (USSOUTHCOM) is one of six geographic COCOMs of the United States. USSOUTHCOM encompasses an area of responsibility (AOR) which includes South and Central America as well as most of the Caribbean Sea. There are 31 countries and 15 special sovereign areas in the region.

As depicted in Figure 6, there are currently 12 partner nations in the USSOUTHCOM AOR; however, only eight are identified as active partner nations:

Chile, Dominican Republic, El Salvador, Guatemala, Honduras, Paraguay, Peru, and Uruguay. Five of these partner nations have either met or are close to meeting Full Training Capability status (Yorio 2014).



Figure 6. GPOI Partner Nations in USSOUTHCOM

The peace operations capabilities of the partner nations in the GPOI program within USSOUTHCOM has large variability. On one end of the spectrum, there are partner nations with significant competency and infrastructure to support a robust peace operations capability even without GPOI support. These partner nations desire to step up and play a more significant role in the regional training and have developed embedded partnership training programs. On the other side of the spectrum, there are partner nations with no previous peace operation capability that have started from scratch under the

GPOI program. Using GPOI training activities and embedded partnerships training programs with more capable countries, these new partner nations have made significant gains in their peace operations capability (Yorio 2014).

Under a previous USSOUTHCOM TCP, the GPOI program was identified as an Intermediate Military Objective (IMO) and Focus Area. The idea of long term sustainment does not fit into the TCP structure, and thus upon completion of all tasks and milestones for the IMO, GPOI was considered complete and removed from the subsequent TCP (Yorio 2014). In reality, the program requires a sustainment portion not captured in the current TCP.

GPOI in USSOUTHCOM has produced mixed results. In recent experiences, FTC training assessments have shown a partner nation fully qualified and prepared for a United Nations peace operations deployment; however, the same partner nation had difficulty in basic peacekeeping capabilities in an actual deployment. Closer examinations into the situation revealed a possible disconnect between training, deployments, and the assessments process, the impetus for USSOUTHCOM's request for NPS research. As displayed in Figure 7, the author believes that there is a theoretical positive feedback loop between GPOI training and peace operations deployments. The cycle starts with peacekeeping units learning from GPOI training. Training is used in actual United Nations peace operations deployments. Experience from deployments is then used to enhance training and continue the cycle.

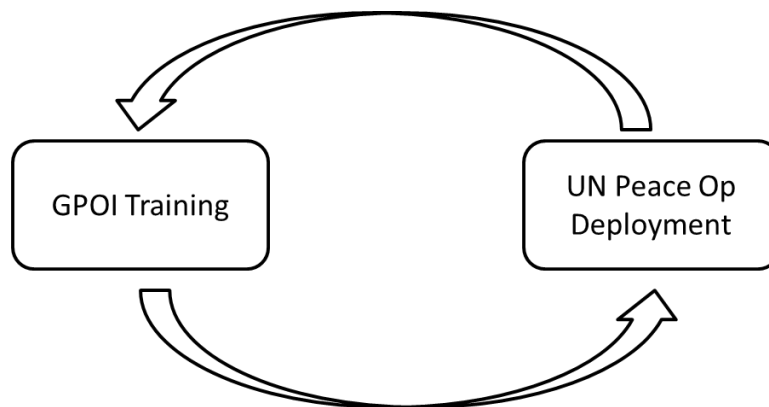


Figure 7. Feedback Loop: Training and Deployment

This chapter provided the background history, purpose, and objectives of the GPOI program with a closer look at the management, assessment processes, and the assessments documents themselves. From this examination, it is clear that GPOI is complex, as different organizations holding different goals and motivations operate together in order to develop a new capability. A systems approach, discussed in Chapter III, brings clarity to the complexity found in GPOI. This information is then used to develop a GPOI system of systems model in Chapter IV.

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III. SYSTEM OF SYSTEMS

This chapter explores the concept of systems of systems. The first part of this chapter explains the systems approach to problem solving and examines common characteristics and different types of systems of systems. The latter part of the chapter describes a system of systems engineering process model and defines seven core elements of systems of systems engineering. It is from the system of systems concepts discussed in this chapter that the Global Peace Operations Initiative (GPOI) is modeled and analyzed.

A. SYSTEMS APPROACH

The Department of Defense defines system as “a functionally, physically, and/or behaviorally related group of regularly interacting or interdependent elements; that group of elements forming a unified whole” (Office of the Deputy Under Secretary of Defense for Acquisition and Technology, Systems and Software Engineering [ODUSD(A&T)SSE] 2008, 3). The International Council on Systems Engineering (INCOSE) provides a more complete definition of a system (Parnell et al. 2011, 3):

An integrated set of elements that accomplishes a defined objective. These elements include products (hardware, software, firmware), processes (policies, laws, procedures), people (managers, analysts, skilled workers), information (data, reports, media), techniques (algorithms, inspections, maintenance), facilities (hospitals, manufacturing plants, mail distribution centers), services (evacuation, telecommunications, quality assurance), and other support elements.

Systems thinking or a systems approach is the use of systems concepts and systems principles to explore a system holistically, in order to provide insight into a real world problem. For example, system engineering tools and techniques applied to the military assessments process discussed in joint doctrine can greatly contribute to the understanding of the system, the environment, the system components, and the interworking relationships between components. In fact, this analysis of the environment is one of the first steps in the joint operations planning process and will be used to analyze GPOI.

Even more so today, systems have become increasingly complex and interconnected. Depending on the level of abstraction, some systems can also be viewed as a collection of systems, called a system of systems. A systems thinking approach toward these types of systems involves examining the whole before examining the parts, as there are system level behaviors that are only seen at the highest system level and not apparent when examining the sub elements. Focusing on the elements individually puts less emphasis on the interactions and behaviors that stem from these interactions (Parnell et al. 2011).

In response to the challenges of increasingly complex systems, systems engineering has expanded to newer approaches, such as model based systems engineering and system of systems engineering. Model based systems engineering provides tools which can help a decision-maker understand a real world problem. A model is a representation of a system in its environment at a moment in time and is useful for architectural development and design but also can be used for analysis, design, verification, and validation purposes. Models are used to better understand a system in its environment.

Some systems can be made to operate together for a higher goal, resulting in a system made up of systems. A system may be classified as a system of systems if constituent systems have some degree of independence and, when integrated, fulfill some purpose which the constituent systems could not fulfill alone. GPOI appears to be a type of system of systems as it is made up of different constituent organizations, such as partner nations, that come together to achieve a new peace operations capability. Systems of systems and systems of systems engineering are further examined in this chapter.

B. SYSTEMS OF SYSTEMS

There is no universally accepted definition of a system of systems. INCOSE defines system of systems as “systems-of-interest whose system elements are themselves systems; typically these entail large scale inter-disciplinary problems with multiple, heterogeneous, distributed systems” (INCOSE 2010). The Department of Defense defines a system of systems as “a set or arrangement of systems that results when independent

and useful systems are integrated into a larger system that delivers unique capabilities (ODUSD(A&T)SSE 2008, 4). Another definition of system of systems is “large-scale integrated systems that are heterogeneous and independently operable on their own, but are networked together for a common goal” (Jamshidi 2009, 2). From the many definitions of system of systems, it is clear that system of systems share certain characteristics.

1. Characteristics of System of Systems

There are five characteristics common to system of systems: autonomy, belonging, connectivity, diversity, and emergence (Jamshidi 2009). Figure 8 shows the spectrum of these characteristics. Each system of systems has characteristics that fall along the spectrum and can help determine the system of systems type and appropriate governance.

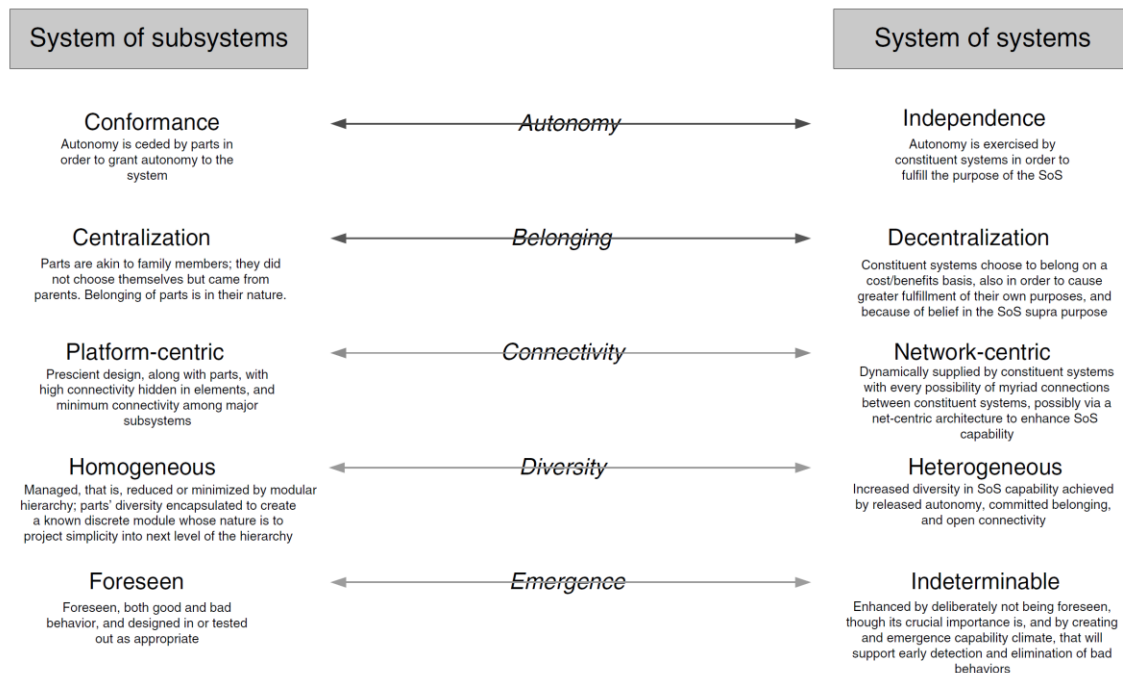


Figure 8. Spectrum of System of Systems Characteristics (from Jamshidi 2009, 206)

a. *Autonomy*

Autonomy is defined as “the ability to make independent choice; the right to pursue reasons for being and fulfilling purposes through behaviors” (Jamshidi 2009, 201). In a system of system, each constituent system, while serving the higher needs of the system of systems, maintains its own autonomy both within and apart from the system of systems. The autonomy of constituent systems within a system of systems can range from conformance to independence.

b. *Belonging*

Belonging is defined as “happiness found in a secure relationship” (Jamshidi 2009, 201). In a single system, components have no individual role outside the system. In a system of systems, constituent systems are integrated together to serve a higher system of systems objective which a single system cannot achieve alone. Each constituent system is an independent system and thus must belong to the system of systems. The spectrum of belonging for constituent systems within a system of systems can range from centralization to decentralization.

c. *Connectivity*

Connectivity is defined as “the ability of a system to link with other systems” (Jamshidi 2009, 202). System components and their relationships are typically designed simultaneously and as such, have high connectivity hidden within their elements. In a system of systems, connectivity is between systems through various connections, which ultimately enhance connectivity in a dynamic environment. On one end of the connectivity spectrum are platform-centric systems of systems; on the other end are network-centric systems of systems.

d. *Diversity*

Diversity is defined as “noticeable heterogeneity, having distinct or unlike elements or qualities in a group; the variation of social and cultural identities among people existing together in an operational setting” (Jamshidi 2009, 203). Combining

autonomy, belonging, and connectivity, systems of systems are comprised of diverse and heterogeneous systems. On the other extreme end of the spectrum are homogeneous.

e. Emergence

Emergence is defined as “the appearance of new properties in the course of development or evolution” (Jamshidi 2009, 204). These properties arise from the interactions between systems and can include both good and bad behavior. Some emergence may be foreseen while others are unintended or unanticipated.

2. Types of Systems of Systems

The Department of Defense divides systems of systems into the four different classifications of virtual, collaborative, acknowledged, and directed (ODUSD(A&T)SSE 2008). These types of systems are defined by the Department of Defense and listed in Table 1. The Department of Defense’s Global Information Grid is an example of a virtual system of systems; the internet is an example of a collaborative system of systems; and the Army’s Future Combat Systems is an example of a directed system of systems. There are an expanding number of military systems classified as acknowledged system of systems. The type of system of systems points to the type of governance or management over the system of systems.

Table 1. Types of System of Systems
(after ODUSD(A&T)SSE 2008, 4)

Type	Definition
Virtual	Virtual system of systems lack a central management authority and a centrally agreed upon purpose for the system-of-systems. Large-scale behavior emerges—and may be desirable—but this type of system of systems must rely upon relatively invisible mechanisms to maintain it.
Collaborative	In collaborative system of systems the component systems interact more or less voluntarily to fulfill agreed upon central purposes. The Internet is a collaborative system. The Internet Engineering Task Force works out standards but has no power to enforce them. The central players collectively decide how to provide or deny service, thereby providing some means of enforcing and maintaining standards.

Type	Definition
Acknowledged	Acknowledged system of systems have recognized objectives, a designated manager, and resources for the system of systems; however, the constituent systems retain their independent ownership, objectives, funding, and development and sustainment approaches. Changes in the systems are based on collaboration between the system of systems and the system.
Directed	Directed system of systems are those in which the integrated system-of-systems is built and managed to fulfill specific purposes. It is centrally managed during long-term operation to continue to fulfill those purposes as well as any new ones the system owners might wish to address. The component systems maintain an ability to operate independently, but their normal operational mode is subordinated to the central managed purpose.

3. Challenges for Systems of Systems

System of systems engineering “deals with planning, analyzing, organizing, and integrating the capabilities of a mix of existing and new systems into [a system of systems] capability greater than the sum of the capabilities of the constituent parts” (ODUSD(A&T)SSE 2008, 4). This involves an analysis of unique system of systems properties such as interoperability, complexity, and emergence.

a. Interoperability

Interoperability can be defined as “the ability of systems, units or forces to provide services to and accept services from other systems, units, or forces, and to use the services so exchanged to enable them to operate effectively together” (Hura et al. 2000, 7). For successful system of systems, high levels of interoperability are critical. Examining the relationships between systems and behaviors that arise from these interactions are important to determining interoperability of a system of systems. NATO expands this characterization of interoperability to “force interoperability,” which is defined as “the ability of the forces of two or more nations to train, exercise, and operate effectively together in the execution of assigned missions and tasks” (NATO 2014).

b. Complexity

Complexity in a system of systems is more than simply the number of constituent systems within a system of systems. In a complex system, the outcome for a set of inputs is generally unknown. Complexity arises from the evolving systems, relationships between systems, unintended emergent behaviors, varying levels of coupling and cohesion, and even external factors on the system of systems. Examining the interactions between systems and the resulting behaviors from these interactions are important to managing complexity in a system of systems.

c. Emergent Behavior

The idea of emergence and emergent behavior is unique to systems of systems. Leonard Kleinrock (2011), in a video interview for the Discovery Channel website curiosity.com, describes emergent behavior.

Emergent behavior is: you create a system, you think you know how it's going to behave, you think you know how it's going to control, you think you've written down the equations or analyzed it, and it configures itself in a way that you did not anticipate, and exposes a behavior, a phenomenon, a result, a performance, that you did not see coming at you. And it's because the control is all over the place. The interaction of a large number of simple things is very hard to predict. The complexity is not in the individual things, it's in the way in which they're interconnected.

Emergence can be equated to second and third order effects in joint operational planning terminology. There are direct effects to decisions which are intended and may or not be desirable. There are also indirect effects from decisions which are unintended and may also be undesirable. A close examination of the interactions will likely reduce the number of unintended and undesirable emergent behaviors

C. SYSTEM OF SYSTEMS ENGINEERING

1. Systems Engineering versus System of Systems Engineering

Table 2 compares systems engineering to system of systems engineering. While system of systems engineering stems from traditional systems engineering, properties of integration, interoperability, emergence and particularly complexity provide challenges to system of systems engineering.

Table 2. Comparing Systems and System of Systems
(after Jamshidi 2009, 47)

Attribute	Systems Engineering	System of Systems Engineering
Focus	Single (often complex) system	Integrating multiple, asynchronous (but interdependent) systems
Objective	Optimization of the System	Achieving the mission capabilities using the best mix of constituent systems available
Goals	Delivering the final system or product	Meeting mission capabilities as the system of systems evolves, and changes, over time
Requirements	Remain relatively fixed and stable throughout the development	Change over time as the mission and the constituent systems change
Boundaries	Well-defined	Fuzzy
Problem	Defined	Emergent with the time and the addition of constituent systems

2. System of Systems Engineering Process

Figure 9 is the system of systems engineering and integration “Vee” process model. It is built on the traditional systems engineering “Vee” process model with additional front and back end steps with an overall system of systems governance. Traditional systems engineering is represented by the base of the “Vee” with multiple layers representing multiple systems. The system of systems engineering process sits on the traditional systems engineering process, but adds a front-end system of systems Architecture and Requirements Development phase, mid-level system of systems Governance and Analysis phase, and final Mission Assurance phase. A system of systems operational architecture will be developed for GPOI following the first steps of this process. This involves defining the operational concept and architecture for GPOI.

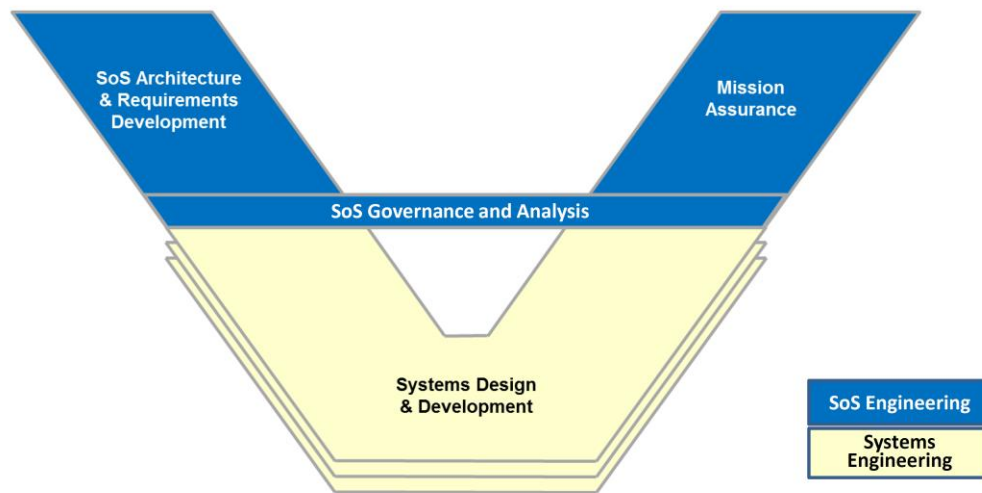


Figure 9. System of Systems Engineering and Integration “Vee” Model
(from Vaneman and Budka 2012)

3. Core Elements of System of Systems Engineering

According to the Department of Defense, there are seven core elements in systems of systems engineering.

a. Translating System of Systems Capability Objectives into High-Level System of Systems Requirements over Time

“Translating Capability Objectives” involves a coordinated effort between the system of systems engineer with the system of systems manager and system of systems users to determine the high level requirements of an identified system of systems (Figure 10). These requirements are derived from a capability need for which the system of systems is to fulfill. This requires a thorough understanding of the operational environment and the dynamics of the system of systems, particularly the drivers behind the system of systems. Additionally, new requirements may arise due to evolving capability needs over time, which is typical of systems of systems (ODUSD(A&T)SSE 2008).

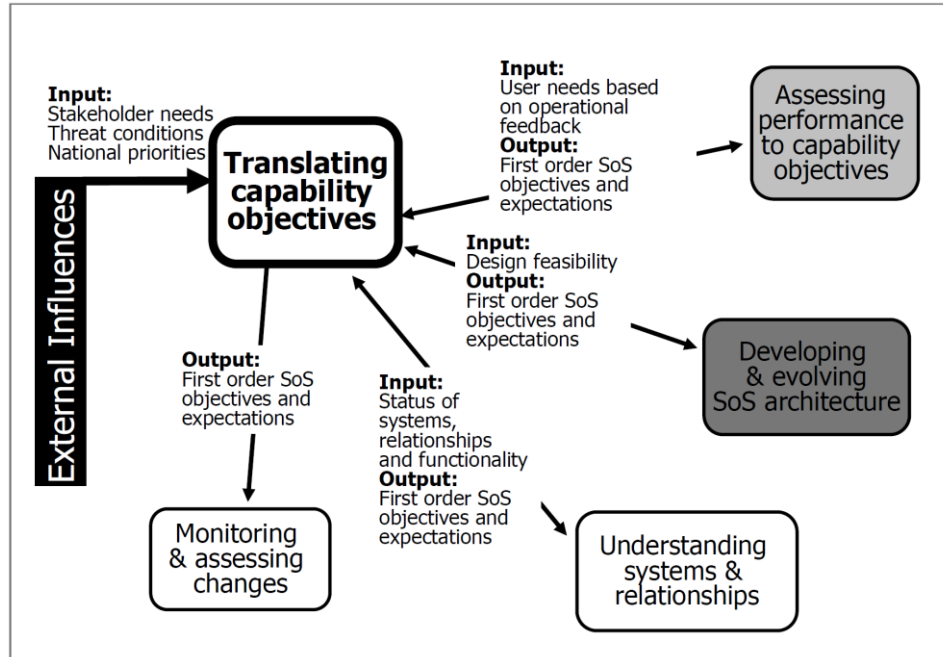


Figure 10. Translating Capability Objectives
(from ODUSD(A&T)SSE 2008, 35)

b. Understanding the Constituent Systems and Their Relationships over Time

“Understanding Systems and Relationships” is arguably one of the most important elements in system of systems engineering (Figure 11). Unlike systems engineering, in which boundaries and interfaces are clear and distinct, system of systems engineering deals with “fuzzy” boundaries as individual and independent systems interact and operate together for system-of-systems-level capability objectives. All the systems, relationships, stakeholders, organizations, and drivers must be identified and fully understood. This allows a greater understanding of the following issues (ODUSD(A&T)SSE 2008, 37):

- Organizational relationships among constituent systems
- Stakeholders and their organizational context to the system of systems
- Relationships between requirements of constituent systems and the system of systems
- Development process and plans of constituent systems to the system of systems

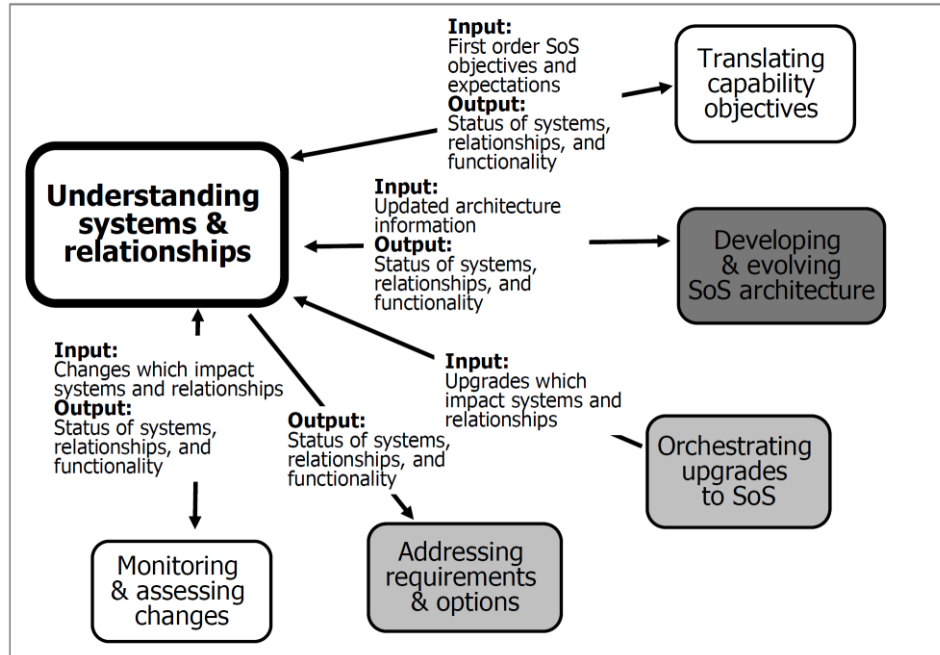


Figure 11. Understanding Systems and Relationships
(from ODUSD(A&T)SSE 2008, 41)

c. Assessing Extent to which System of Systems Performance Meets Capability Objectives over Time

“Assessing Performance to Capability Objectives” is a critical part to fully understanding the system of systems in its operating environment over time (ODUSD(A&T)SSE 2008). As seen in Figure 12, the focus is developing metrics to assess the end-to-end performance of the system of systems with respect to the capabilities and high level objectives. Data should be collected from users in the actual operating environment and these measures should be traceable to the capability objectives. Over time, metrics help to identify deficient areas or any emergent behavior and the impact of emergence on the overall mission performance.

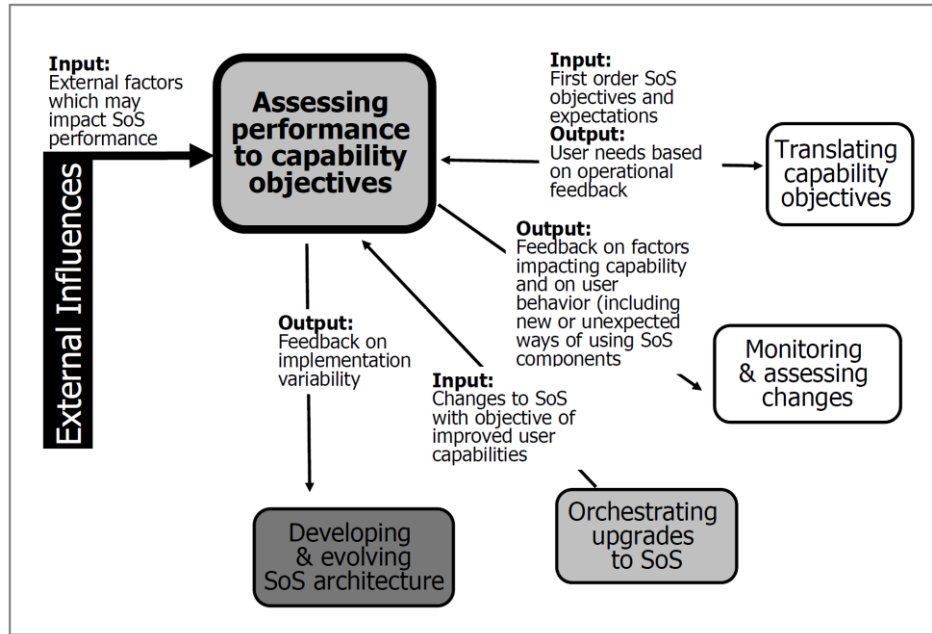


Figure 12. Assessing Performance to Capability Objectives
(from ODUSD(A&T)SSE 2008, 45)

d. Developing, Evolving and Maintaining an Architecture for the System of Systems

“Developing and Evolving a System of Systems Architecture” is an important part of system of systems engineering as seen in Figure 13. This element “defines the way systems work together to meet user needs and addresses the implementation of individual systems” (ODUSD(A&T)SSE 2008, 47). The architecture should include the system of systems concept of operations, functions, and relationships between constituent systems. In most cases, the constituent systems are already established, and thus the current condition and plans of the systems must be considered in the architecture development.

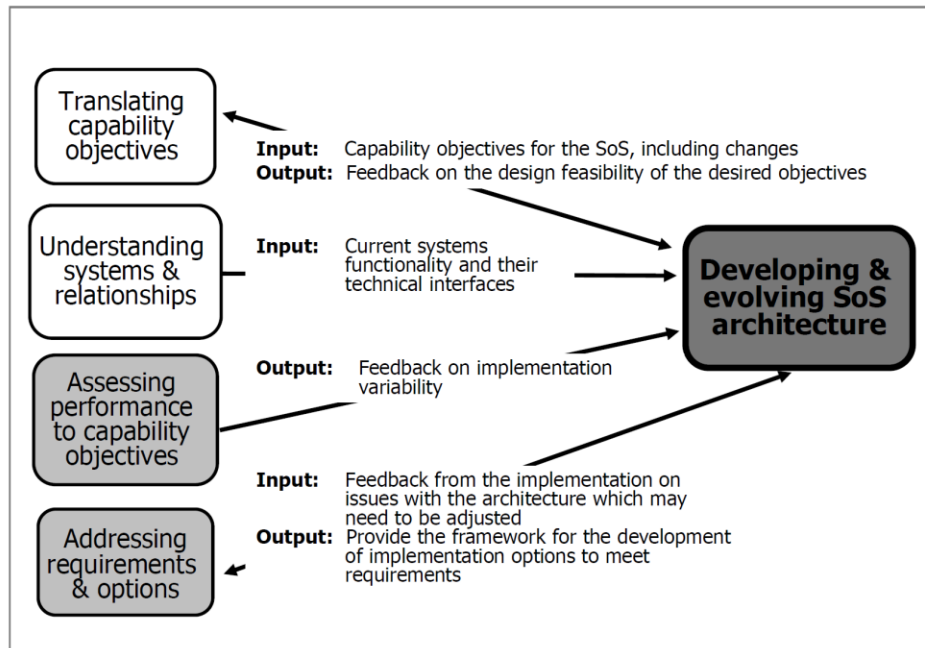


Figure 13. Developing and Evolving System of Systems Architecture
(from ODUSD(A&T)SSE 2008, 51)

e. Monitoring and Assessing Potential Impacts of Changes on System of Systems

“Monitoring and Assessing Changes” (Figure 14) includes identifying and tracking both internal changes to and external demands on the system of systems (ODUSD(A&T)SSE 2008). The constituent systems within a system of systems may evolve independently, thus affecting the overall system of systems. This preemptive mitigation is to minimize potential problems by analyzing the changes and the impact of those changes to system of systems performance and functionality.

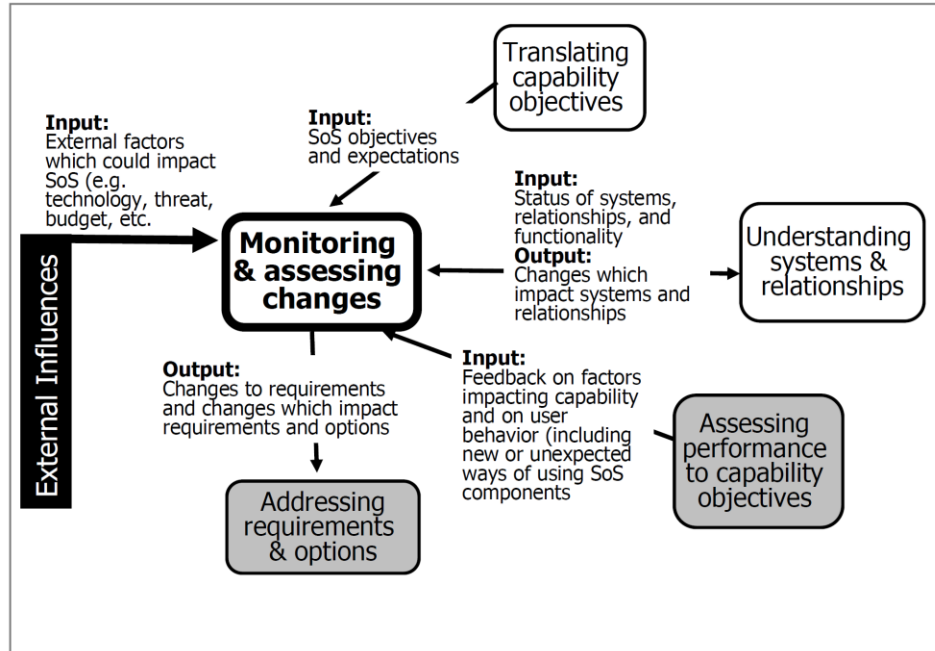


Figure 14. Monitoring and Assessing Changes
(from ODUSD(A&T)SSE 2008, 57)

f. Addressing System of Systems Requirements and Solution Options

“Addressing Requirements and Solution Options” (Figure 15) is a delicate balancing act for system engineers of system of systems. Constituent systems are often independent systems with individual requirements and constraints. The system of systems also has requirements and constraints and must be balanced with the constituent systems. This involves thorough examination of the trade space as well as prioritizing the needs of the system with the needs of the system of systems. As systems evolve, requirements may also evolve. A solid architectural framework should minimize the impact of changes on the system of systems (ODUSD(A&T)SSE 2008).

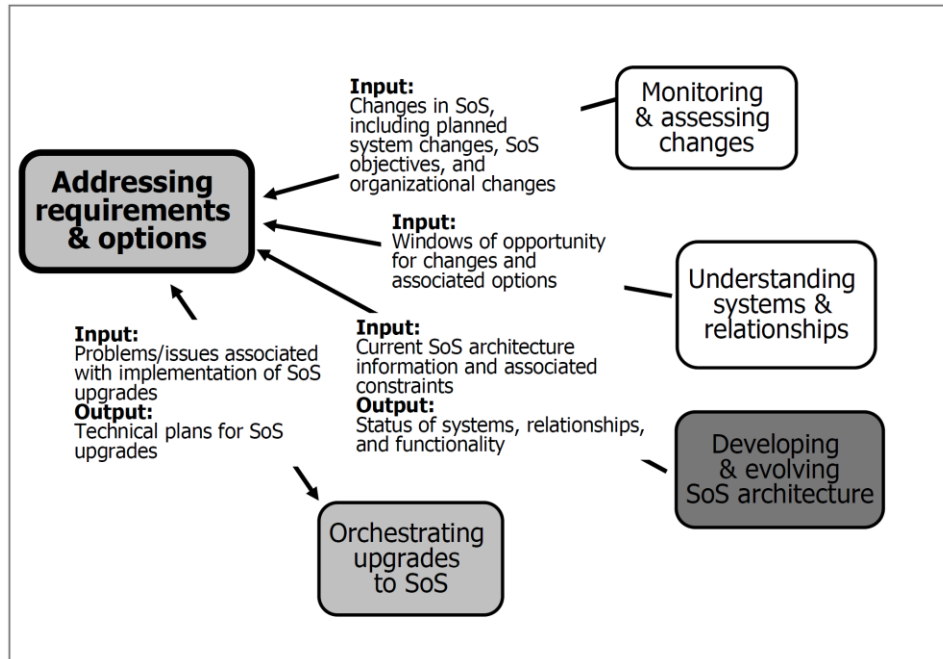
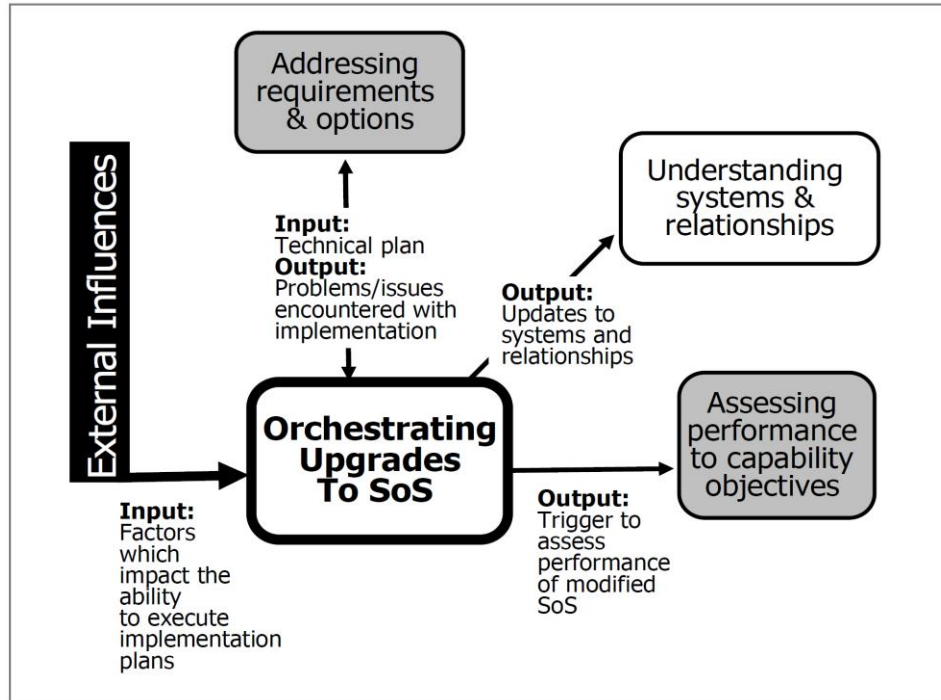


Figure 15. Addressing Requirements and Options
(from ODUSD(A&T)SSE 2008, 60)

g. Orchestrating Upgrades to System of Systems

“Orchestrating Upgrades to System of Systems” involves improving or adding capabilities to the system of systems (Figure 16). The system of systems engineer plays the lead role, overseeing coordination, integration, and testing, while the constituent systems implement the upgrades to their respective system (ODUSD(A&T)SSE 2008). This process should involve of all stakeholders.



4. Relationship between Core Elements of System of Systems Engineering

The seven core elements of system of systems engineering cannot operate independently as inputs to and outputs from each element affect or are affected by other elements. Figure 17 illustrates the relationship between the core elements. Note the external environment influences on the core elements. GPOI will be examined using some of these core elements, with a focus on translating capability objectives and understanding systems and relationships.

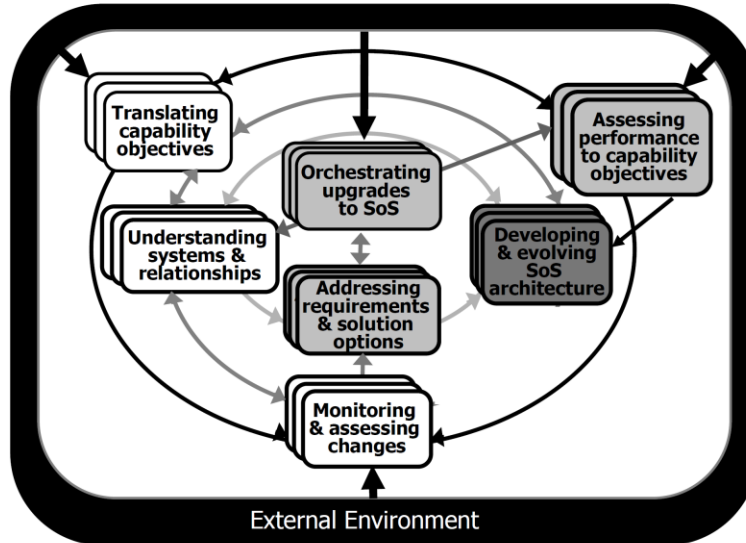


Figure 17. Relationship between Core System of Systems Engineering Elements (from ODUSD(A&T)SSE 2008, 30)

This chapter described system of systems concepts necessary for a holistic systems analysis of GPOI. Characteristics of systems of systems and core elements of systems of systems engineering are used to develop a system of systems architecture for GPOI in Chapter IV. An analysis of this operational architecture with an emphasis on the relationships between systems will highlight areas of concerns regarding the GPOI assessments. Recommendations from these identified friction points are given in Chapter V.

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IV. GPOI SYSTEM OF SYSTEMS ARCHITECTURE DEVELOPMENT

Combining the background information from Chapter II with the system of systems concepts described in Chapter III, this chapter serves as the primary focus of this thesis, as it defines the Global Peace Operations Initiative (GPOI) as a system of systems and develops a system of systems operational architecture model. From an analysis of major stakeholders, an operational concept is described with major stakeholders acting as systems within a system of systems. The architecture is explained through the use of event models which describe the behavior of each system. Interactions models show the physical and informational exchanges between the systems. From these models, system of systems governance and friction points are identified. This chapter answers whether a model of GPOI as a system of systems enhances the operations assessment of GPOI, describes what the models reveals about the current GPOI assessments methodology, and explores characteristics that may improve GPOI.

A. STAKEHOLDER ANALYSIS

To fully grasp the complexity of the problem, an analysis of the major stakeholders and their respective views is required. This is the first part to understanding the system in its environment. The major stakeholders identified in the GPOI program are the Department of State, the Department of Defense, and the partner nation. External to GPOI are other major stakeholders including the U.S. Congress and the United Nations. The Department of State includes the GPOI program office which includes the program director and the regional bureaus. The Department of Defense includes the Office of the Secretary of Defense for Policy/Peacekeeping, the COCOM GPOI manager, and the security cooperation organizations. The partner nation includes the country's governing bodies, diplomats, and peacekeeping units. Stakeholders can be broadly classified as a decision authority, client, owner, user, consumer, or interconnected (Parnell et al. 2009, 6). The stakeholders view the GPOI program through slightly different lenses, ultimately shaping their desires, goals, and expectations. Full involvement and commitment is required from all stakeholders for a successful program.

1. U.S. Congress

The Congress of the United States is the legislative branch of the United States government. As they control the funding for GPOI, they have been identified as interconnected to GPOI, although external to the program. While not intimately involved in the day-to-day activities of the GPOI program, Congress holds program oversight and requires justification for any funding and, not to mention, the program's existence (Yorio 2014). Congress, with a strategic level point of view, is most interested in the outcome for the money invested and relies on GPOI assessments briefings from the GPOI program director. Likely, these assessments and the tangible outcomes influence their decision to continue funding or to cancel the program.

2. U.S. Department of State

The U.S. Department of State is a key stakeholder in the GPOI program, holding the responsibilities of program oversight, allocation of funds to partner nations, and assessments (DOS 2013b). Within the Department of State are the GPOI program office, GPOI regional bureaus, and embassies. While the GPOI program is divided into regions, the State department typically engages each partner nation separately and individually.

a. GPOI Program Office

The GPOI program office is led by the GPOI program director with a staff including regional directors, financial managers, data managers, and an assessments metrics and evaluation team (DOS 2013b). Fulfilling the system of systems manager role, the GPOI program director is the decision authority within the GPOI program and generally holds a strategic-operational point of view. The program office holds overall program responsibilities and thus updates program objectives, decides assessment metrics, and tracks partner nation progress toward peacekeeping capabilities (DOS 2013b). With a main desire to support the United Nations' efforts to improve peacekeeping capabilities while enhancing relations with partner nations, the GPOI program office uses annual assessments to justify the program's existence (Yorio 2014).

b. U.S. Embassy

The U.S. embassy staff, working on the front lines at a tactical level, deals with the daily activities of the GPOI program as an interconnected type of stakeholder. In the embassy are diplomats and ambassadors under the U.S. Department of State as well as members of the security cooperation organization. As implementers of the program, the embassy has the most contact with the government of the partner nation and can be intimately aware of any political, economic, military, cultural, and interagency cooperation issues within the partner nation (Yorio 2014). Directly affecting the relations between the United States and the partner nation, GPOI is a tool for the embassy to engage the partner nation.

3. U.S. Department of Defense

The U.S. Department of Defense is another key stakeholder in the GPOI program, acting as owners, users, and interconnected types. The Department of Defense holds the responsibilities of COCOM level management, distribution of funds to partner nations, and implementation of GPOI activities (DOS 2013b). Within the Department of Defense are the Office of the Secretary of Defense for Policy/Peacekeeping, the COCOM GPOI managers, and security cooperation organizations. Most GPOI activities are coordinated and executed within the COCOM level. As both managers and implementers of the program, players within the Department of Defense view the program from the strategic level through the operational level, and down to the tactical level. The Department of Defense is more regionally focused and typically engages partner nations with their respective geographical neighbors (Yorio 2014).

a. Office of the Secretary of Defense

The Office of the Secretary of Defense/Under Secretary for Policy/Special Operations and Low-Intensity Conflict and Interdependent Capabilities/Partnership Strategy and Stability Operations/Peacekeeping Policy and Operations plays a high level administrative role in the GPOI program. Working closely with the GPOI program office, Office of the Secretary of Defense for Policy/Peacekeeping is an interconnected stakeholder at the strategic-operational level, supporting the GPOI program through the

allocation of Department of Defense manpower resources. Tasking of GPOI implementers from the GPOI program office passes through the Office of the Secretary of Defense for Policy/Peacekeeping (DOS 2013b).

b. U.S. Southern Command GPOI Manager

The GPOI manager for USSOUTHCOM plays an operational level role in the GPOI program and is an owner type of stakeholder in the system of systems. As the operational level, GPOI-related activities are planned, approved, and executed through this office (DOS 2013b). Responsibilities include the consolidation and evaluation of annual assessments and reports from the GPOI implementers as well as the submission of these reports to the GPOI program office. Additionally, allocated GPOI funds are held at the COCOM level for distribution to the GPOI implementers within each partner nation. The COCOM GPOI manager, while engaging the GPOI implementers individually, is concerned with regional stability and holds a regionally focused view of all the partner nations within the COCOM (Yorio 2014).

c. Security Cooperation Organization

The security cooperation organization, sometimes referred as U.S. military groups, is the tip of the spear for the GPOI program. As implementers of GPOI program, the security cooperation organization works daily with the partner nation through GPOI activities. With the U.S. embassy, the security cooperation organizations support the partner nation's progress toward completing GPOI goals (Yorio 2014). Annual FTC training assessments of the partner nation and GPOI activity quarterly reports are generated at this tactical level. Security cooperation organizations are owner-type stakeholders within the system of systems.

4. Partner Nation

The partner nation is a key stakeholder for the GPOI program and actually has the most to gain from participation. As user stakeholders within the system of systems, the partner nation encompasses the governing entities within the nation, diplomats, and the peacekeeping units. Each partner nation plans to develop peacekeeping capabilities to

support United Nations efforts in peace operations around the world. In return for the skills, knowledge, and abilities gleaned from GPOI supported activities and subsequent United Nations peace operations deployments, partner nations receive a professional and well-educated force as well as financial compensation for deployments (Yorio 2014). The partner nation could potentially benefit socially, politically, and economically as the members of the peacekeeping forces become the future leaders of their countries and use their knowledge, education, and international experiences. Through participation in United Nations peace operations, the partner nation could also garner greater international recognition.

5. United Nations

The United Nations is a key stakeholder and a consumer for the GPOI program, receiving trained peacekeeping forces for United Nations peace operation deployments. After identifying and sanctioning a peace operation, force requirements for peace operations are determined and the United Nations negotiates with participating nations to fulfill needed peace operations capabilities. Partner nations with critical enabler capabilities have a better chance at securing a United Nations peace mission (Yorio 2014). In return, the United Nations reimburses participating countries for peace operation deployments.

6. Stakeholder Relationships

The organizational command and control relationships between the stakeholders as interpreted by the author are displayed in Figure 18. The external stakeholders, U.S. Congress and the United Nations, interact with the GPOI program director and the partner nation representative, respectively. The relationship between the Department of Defense, the Department of State, and the partner nation are heavily intertwined. From a cursory glance, the security cooperation organization plays an important role and must coordinate with multiple other stakeholders, highlighting the importance of an effective interagency process. For graphical purposes, this figure only shows a single COCOM when in reality there are multiple geographic COCOMs, each with individual partner nations.

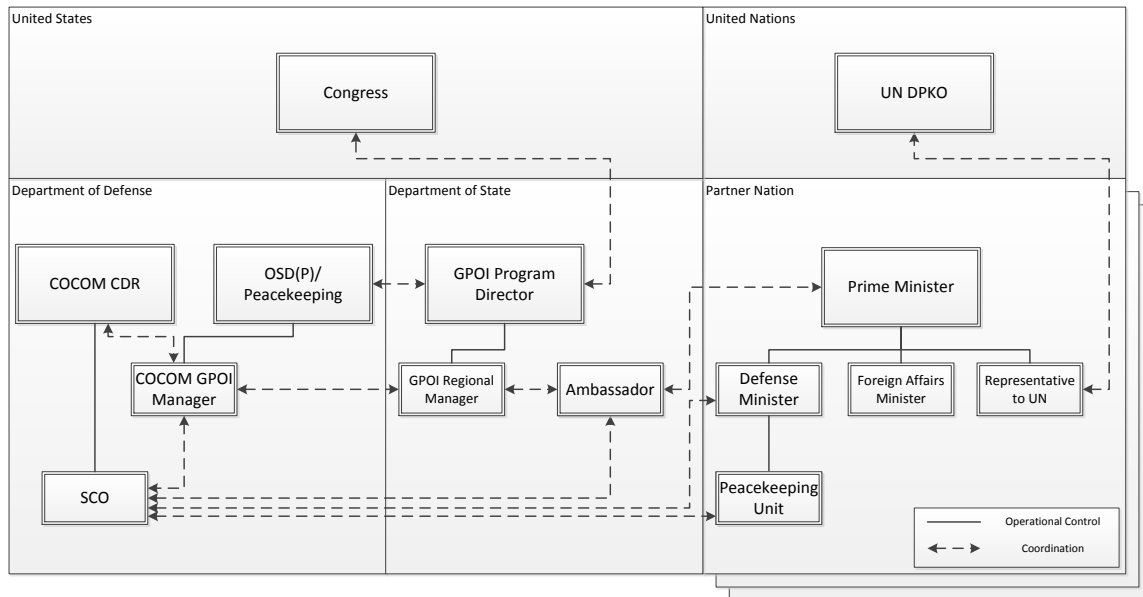


Figure 18. Stakeholder Relationships

B. CAPABILITY ANALYSIS

1. Operational Concept

The operational concept serves to describe the system of systems with an operational perspective. With the stakeholder needs and desires, the operational concept should describe the capability need addressed by the system of systems. For GPOI, the capability need is to develop international capacity to effectively conduct United Nations peace operations. Figure 19 displays the operational concept over time, as understood by the author, from pre-GPOI, to current GPOI operations, and to a GPOI end state.

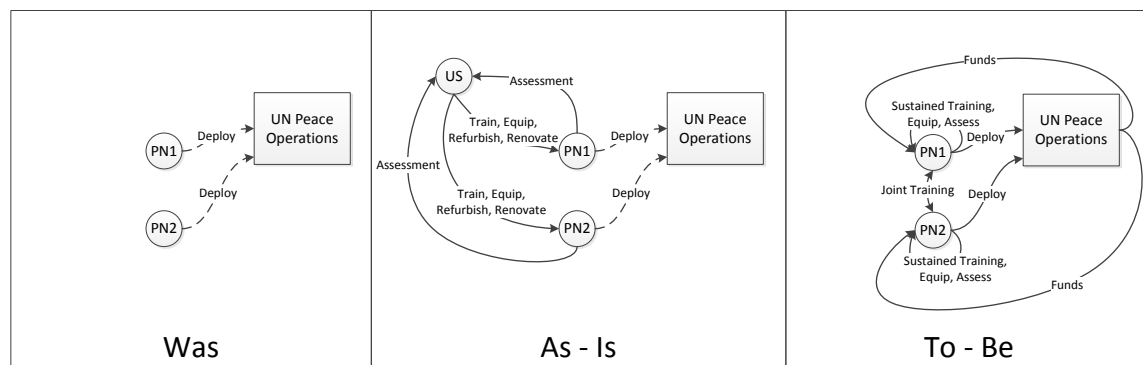


Figure 19. GPOI Concept of Operations over Time

In the “Was” state, the United States found itself involved in United Nations Peace Operations deployments because other nations had very limited ability to effectively conduct peace operations due to limited training, poor infrastructure support, and lack of experience. With GPOI today, described in the “As-is” state, the United States provides support through training, equipment, refurbishment, and renovation to partner nations to develop and strengthen peace operations capability and to deploy on United Nations peace operations. The “To-Be” state describes the desired end state of the GPOI system of systems in which partner nations have developed an effective peace operation capability. Additionally, the peace operations capability is to be fully self-sustainable without assistance from the United States.

To develop the capability objective of an enhanced international capacity to conduct United Nations peace operations, the major operational activities of the GPOI systems is examined through the interactions between systems. Figure 20 displays the system interactions between systems in GPOI as understood by the author. While the diagram shows U.S. Congress and the United Nations outside the system of systems boundary, these systems are highly influential to GPOI. Further, the boundaries for a system of systems are not so clear cut and are often “fuzzy.” However, it is clear that interactions are seen between systems both within the system of systems boundary and across the system of system boundary to external systems.

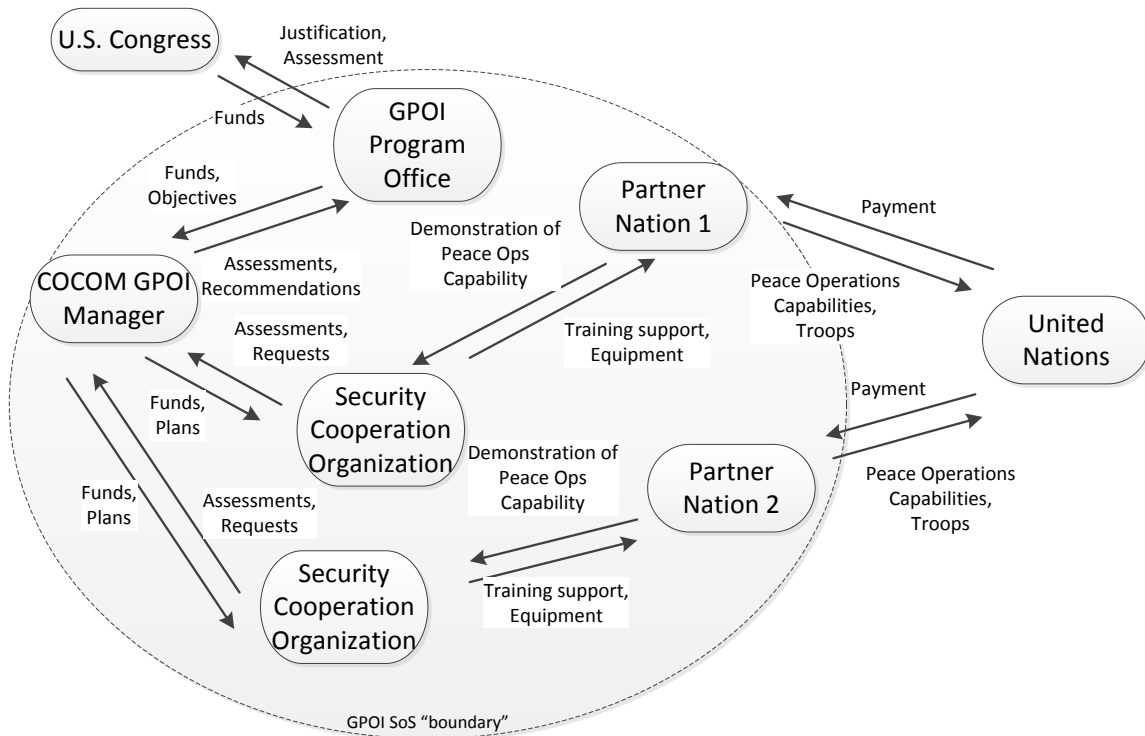


Figure 20. Operational Context

From the security cooperation organizations, all assessments and any requests are sent to the COCOM GPOI manager, who submits the assessments and recommendations to the GPOI program office. The assessments are used to justify and receive funds from U.S. Congress, which are then allocated and distributed down to the security cooperation organizations to use on training support, equipment, and infrastructure for the partner nations. GPOI activities help the partner nation develop a peace operations capability, which is demonstrated to the security cooperation organization for assessment, completing the cycle. Additionally, the partner nation negotiates deployment opportunities with the United Nations, where the newly developed peace operations capabilities are utilized. In return for these services, the United Nations pays a reimbursement payment to the partner nation.

2. Capability Objectives

The overall end state of the GPOI program is enhanced international capacity (through partner nations) to effectively conduct United Nations and regional peace operations. This is carried out by three major objectives:

- **Major objective 1:** Building partner country capabilities to train and sustain peacekeeping proficiencies
- **Major objective 2:** Increasing the number of capable military troops and formed police units available for deployment
- **Major objective 3:** Facilitating the preparation, logistical support, and deployment of military units and formed police units to peace operations

The three major objectives are linked to the Phase II objectives in Table 3. The major objectives supported are listed below each phase objective. From this, it can be held that the Phase II objectives do support the overall program objectives. It is also apparent that the metrics collected are heavily focused on only the first Phase II objective. The seven metrics listed under the first phase objective are the only metrics collected by the annual FTC Assessment discussed in Chapter II.

Table 3. Linking GPOI Objectives to Metrics

Phase II Objective	Metric (units)
1.0 Strengthen institutional infrastructure required to achieve and sustain self-sufficient capability to conduct peace operations training (<i>supports major objective 1</i>)	1.1 Dedicated Trainer Cadre (Scale 1-5)
	1.2 Trainer Cadre Sufficiently Trained and Resourced (Scale 1-5)
	1.3 Sufficient Overall Training Center Infrastructure (Scale 1-5)
	1.4 Sufficient Training Facilities and Equipment (Scale 1-5)
	1.5 Written Program of Instruction (Scale 1-5)
	1.6 Process for After-Action Reviews (Scale 1-5)
	1.7 Country Demonstrates Will/Ability to Sustain FTC (Scale 1-5)
2.0 Train peacekeepers with emphasis on “train-the-trainer” instruction (<i>supports major objectives 1, 2</i>)	2.1 Number of Trained Peacekeepers (#)
3.0 Support to deploying units (<i>supports major objective 3</i>)	3.1 Number of Deployed Peacekeepers (#)
4.0 Enhance region to train, plan, deploy, manage, sustain, obtain, integrate lessons learned from peace operations (<i>supports major objectives 1, 3</i>)	4.1 Number of Multinational Exercises and Workshops (#)
	4.2 Peace Operations Training Centers (#)
5.0 Strengthen infrastructure and doctrinal framework required to train, equip, deploy FPU (<i>supports major objectives 1, 2, 3</i>)	5.1 Number of Formed Police Units (#)
6.0 Support multilateral partnerships for peace ops capacity building efforts (<i>supports major objectives 1, 3</i>)	Qualitative measurements of support, conferences, and professional papers (N/A)

C. ARCHITECTURE BEHAVIOR MODELS

Each of the major stakeholders is a system within the GPOI system of systems. Each system, in the execution of the GPOI program, performs a series of activities. These activities are captured in an event model which describes the behavior of each performer. The relationships between the activities are captured in interaction models later in this chapter. This separation of event modeling and interaction modeling methodology was inspired from by Giammarco et al. (2012) and allows for more a more robust description of behaviors through the individual event models per system. Using the analysis of the major stakeholders, the operational concept, and capability objectives, the author has developed architecture behavior models for GPOI. An activity is represented by box; decision point activities are represented by boxes with diamonds.

1. U.S. Congress

U.S. Congress, identified as an interconnected-type stakeholder, is modeled in Figure 21. Congress, while continuously holding congressional oversight, is involved in the funding of the GPOI program. Upon receiving the annual request for funds, Congress evaluates the GPOI program director's justification for funds, based on the assessments provided by the GPOI program office. Congress decides either to approve or to reject funding for the program.

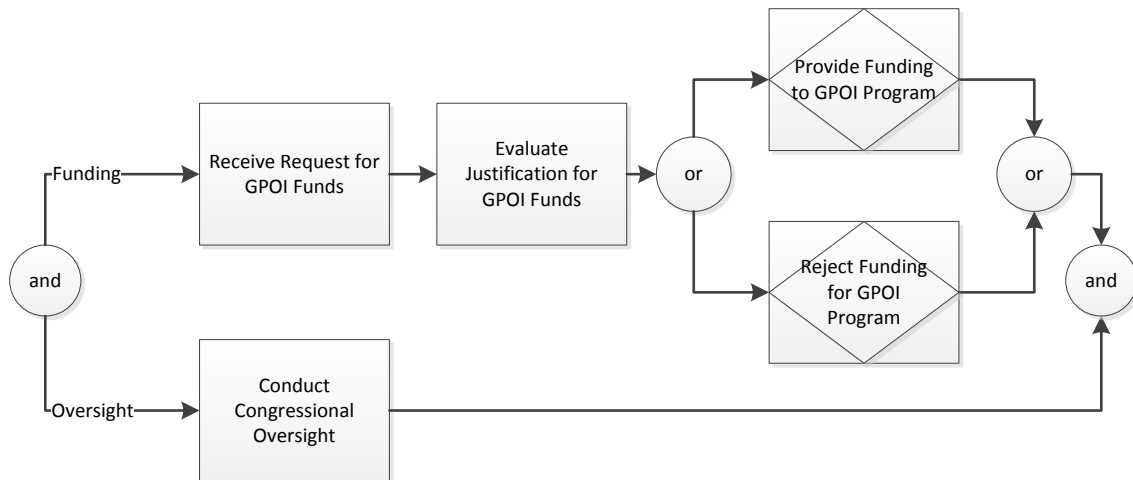


Figure 21. U.S. Congress Event Model

2. Department of State

The Department of State is the decision authority and manager of the GPOI program. The key player within the Department of State is the GPOI program director, modeled in Figure 22. As the head of the program, the director is involved in the program funding request and allocation of funds to the regions and partner nations; developing, communicating and monitoring program high-level objectives; conducting program oversight; and reviewing assessments of the individual partner nations while tracking each nation's progress toward attaining a full training capability status. The program director is overall responsible to Congress for the justification of the program and the program's budget, which is based on the program assessments.

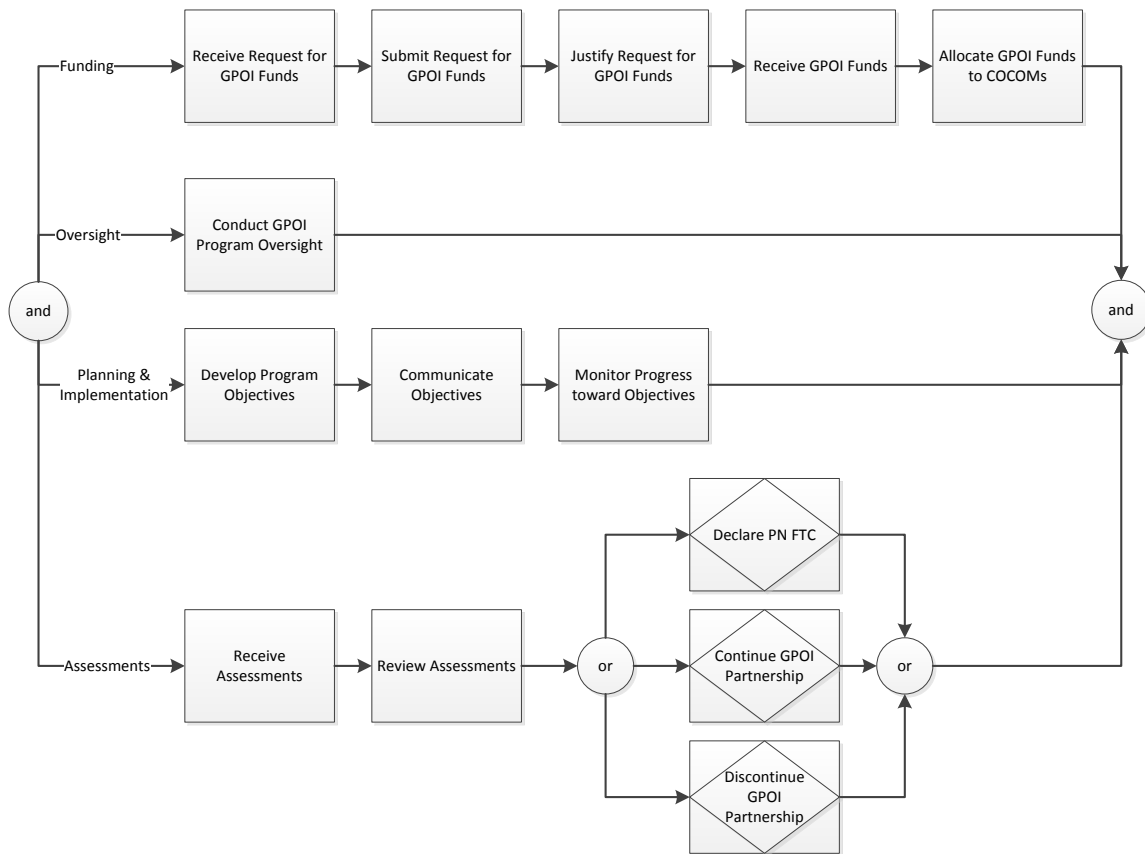


Figure 22. GPOI Program Office (Department of State) Event Model

3. Department of Defense

The Department of Defense includes both managers and maintainers of the system. The key players are the COCOM GPOI manager and the security cooperation organization. COCOM GPOI manager is the link between the GPOI program office and the GPOI Implementers. As a manager of the system, the COCOM GPOI manager is involved in the funding process, allocation of funds, coordination of GPOI activities, and initial review for assessments. Based on the annual assessments, the COCOM GPOI manager gives recommendations to the GPOI program office on the FTC status of partner nation. Additionally, funding is held at the COCOM level to distribute to the security cooperation organizations within partner nations. The event model for the COCOM GPOI manager is displayed in Figure 23.

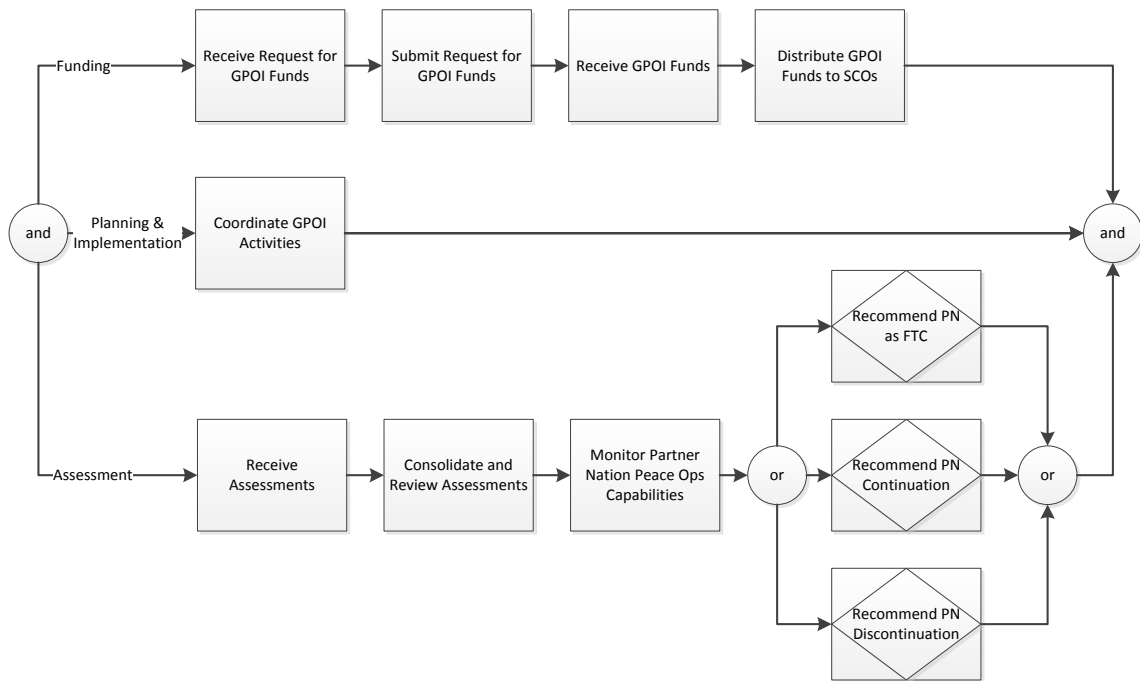


Figure 23. COCOM GPOI Manager (Department of Defense) Event Model

As operators and maintainers of the system, the security cooperation organization plays an important role in the GPOI program. Interfacing directly with the partner nation and the peacekeeping units, the security cooperation organization coordinates the GPOI activities with the partner nation, monitors the activities, and assesses the peacekeeping units on peacekeeping capability. Additionally, the security cooperation organization submits request for funds based on the needs of the partner nation. When funds are received, the security cooperation organization uses the funds for training and equipment to carry out GPOI training related activities. Figure 24 depicts the event model for the security cooperation organization.

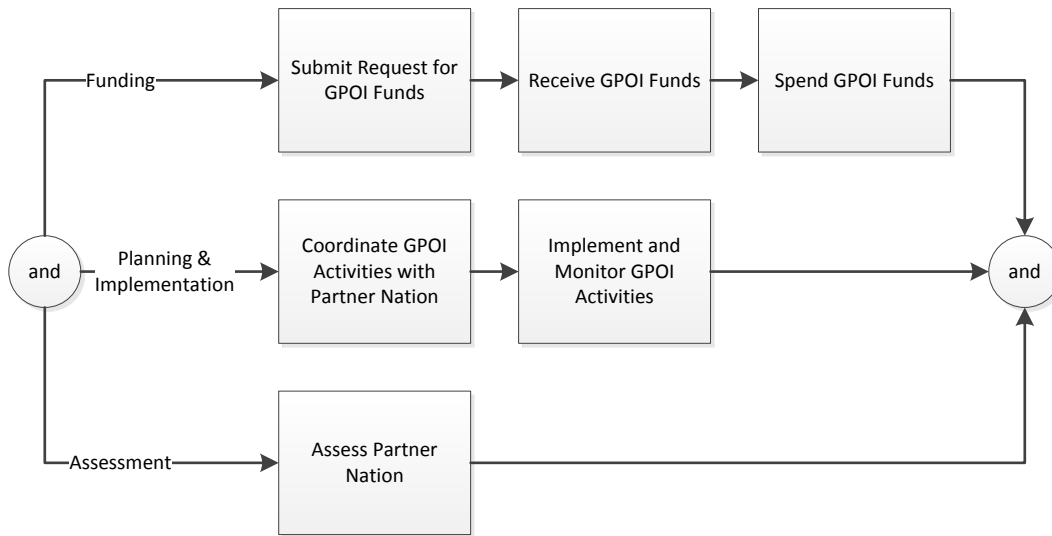


Figure 24. Security Cooperation Organization (DOD) Event Model

4. Partner Nation

The partner nation is a user type of stakeholder in the GPOI system of systems. With coordination with the security cooperation organization for GPOI related training and equipment, the partner nation peacekeeping units execute GPOI activities. Performance in these activities is assessed by the security cooperation organizations. Based on the goals of the partner nations, GPOI related activities can be used toward developing a standard peace operations capability or, if able and willing, developing a United Nations “critical enabler” capability. “Critical enabler” capabilities are more advanced and require significantly more resources to achieve; however, United Nations peace operations deployments are easier to negotiate for nations with these extra capabilities. Figure 25 shows the event model for the partner nation.

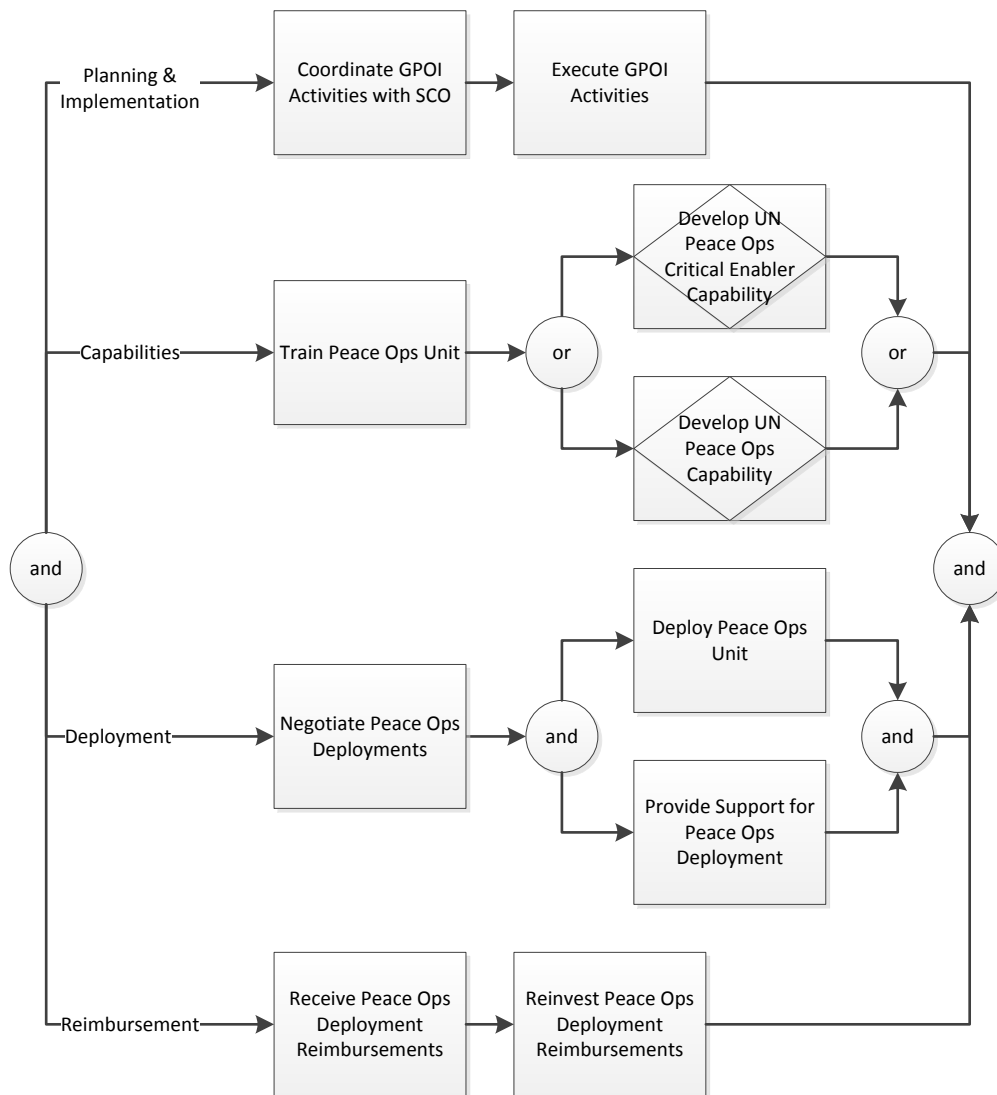


Figure 25. Partner Nation Event Model

Partner nations also are responsible for negotiating peace operation deployments with the United Nations. If selected to deploy, the partner nation must deploy peacekeeping units and provide the support to sustain these units. Post deployment, the partner nations receive reimbursements for their nation's service to peace operation. Ideally, that reimbursement money is reinvested into further developing peacekeeping capabilities.

5. United Nations

The United Nations is a consumer stakeholder and user of the GPOI program. With conflicts around the world, the United Nations identifies peace operations requirements including the forces needed for a peace operations deployment. Participating countries able to achieve these force requirements are offered a negotiation to deploy. Post-deployments, the United Nations reimburses nations. Also acting as a decision maker, the United Nations determines capability deficiencies and identifies “critical enabler” capabilities. Nations with these “critical enabler” capabilities have a greater chance of negotiating peace operation deployments. Figure 26 shows the event model for the United Nations.

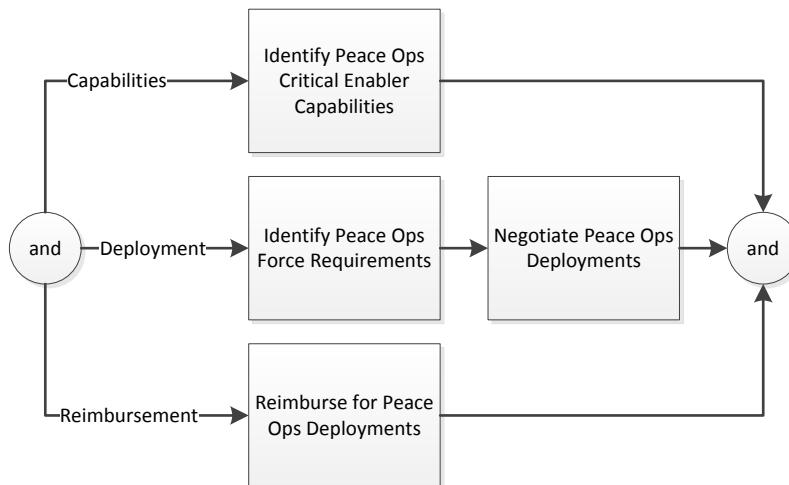


Figure 26. United Nations Event Model

D. ARCHITECTURE INTERACTION MODELS

Each activity within the event models are related to other activities of other systems. Using the analysis of the major stakeholders, the operational concept, and capability objectives, the author has developed architecture interaction models for GPOI using an event and interaction modeling methodology inspired by Giammarco et al. (2012). The relationships between the activities are captured in the following interaction models, highlighting the funding process, assessments process, planning and implementation process, peace operations capability process, deployment process, and

reimbursement process. Once again, an activity is represented by box while decision point activities are represented by boxes with diamonds. Green ovals represent resources.

1. GPOI Funding

The request for funding comes from the security cooperation organization, located in the partner nation. Based on the identified capability gaps in attaining GPOI objectives for a partner nation, activities are planned, associated costs estimated, and the request is submitted up to the next higher level, typically the COCOM GPOI manager. At the COCOM level, the request is received, consolidated, and submitted to the GPOI program office, which evaluates and submits a budget request to U.S. Congress. In Figure 27, the green “Request” object is a resource generated from the “Submit Request for GPOI Funds” activity and consumed by the “Receive Request for GPOI Funds” activity. The U.S. Congress receives the request and, based on the behavior model, decides to either provide funding or reject funding for the GPOI program.

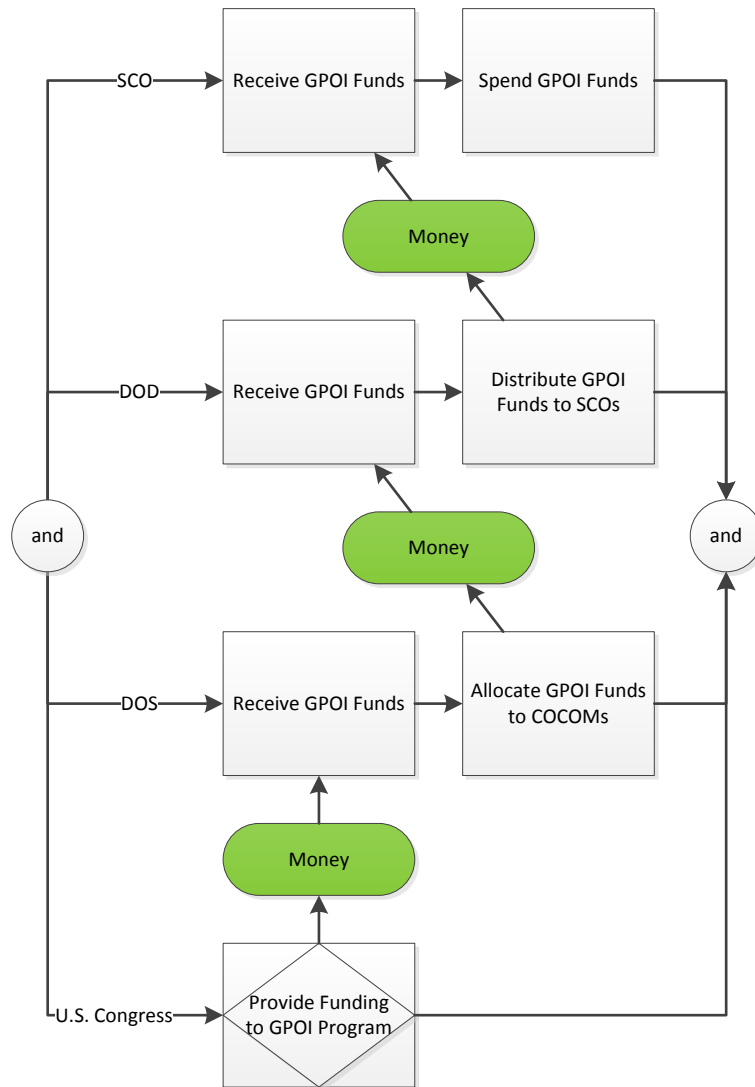


Figure 28. GPOI Funding Interaction Model

2. GPOI Assessments

The GPOI program office must justify their request for funds to the U.S. Congress before funding is provided. Justification comes from the FTC Training Assessment conducted for each partner nation. The security cooperation organization conducts the annual assessment form and submits the assessment up to the COCOM level. At each level, the assessments are received, consolidated, and reviewed. Figure 29 displays the relationship between the security cooperation organization, COCOM GPOI manager, and GPOI program office with respect to assessments.

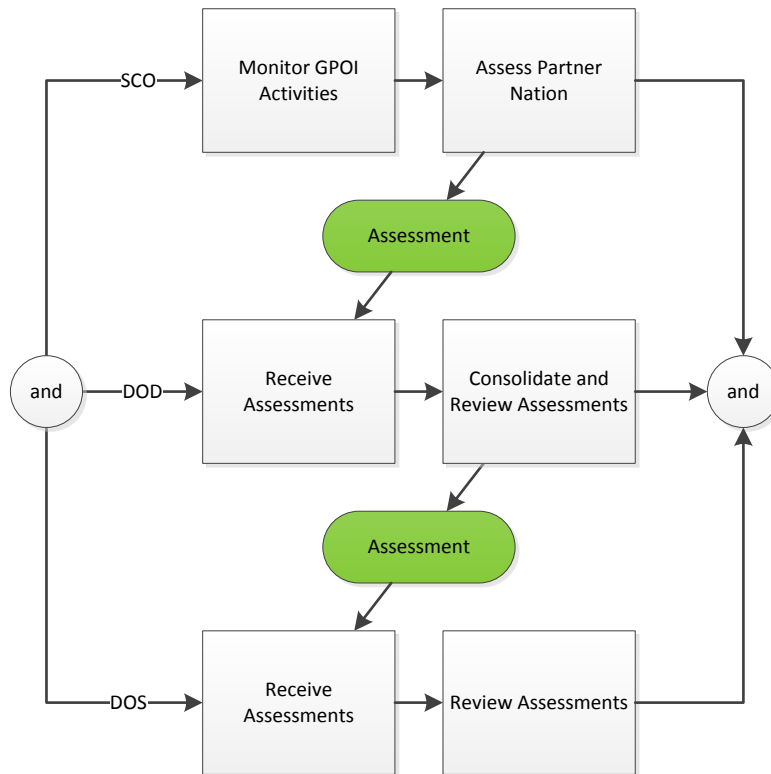


Figure 29. GPOI Assessments Interaction Model 1 of 3

The metrics and evaluation team in the GPOI program office uses the annual FTC assessments results to monitor each country’s progress toward the program objectives. This analysis is then used by the GPOI program director to justify to U.S. Congress their budget request, thus providing the trigger to start the sequence in the GPOI Funding Interaction Model (Figure 28). The conversion of assessment results into justification through the “Monitor Progress towards Objectives” activity can be seen in Figure 30.

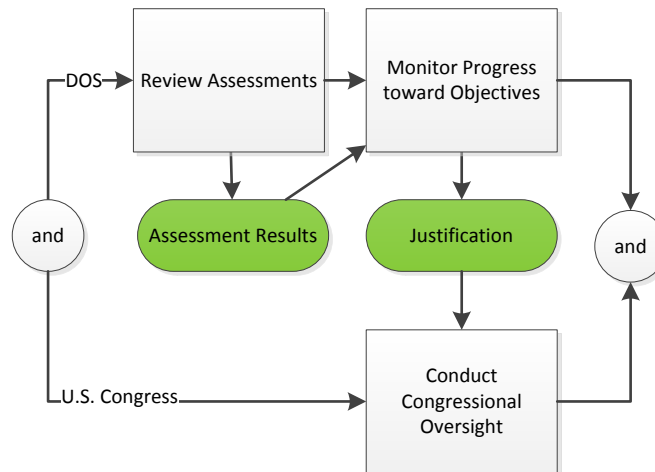


Figure 30. GPOI Assessments Interaction Model 2 of 3

The annual assessments are also used by the GPOI program office, along with the recommendations provided by the COCOM GPOI manager, in the decision to declare a partner nation FTC. From the GPOI program office event model, this decision also included the options to continue or discontinue GPOI partnership with the particular partner nation. Figure 31 describes the case in which the partner nation was declared FTC.

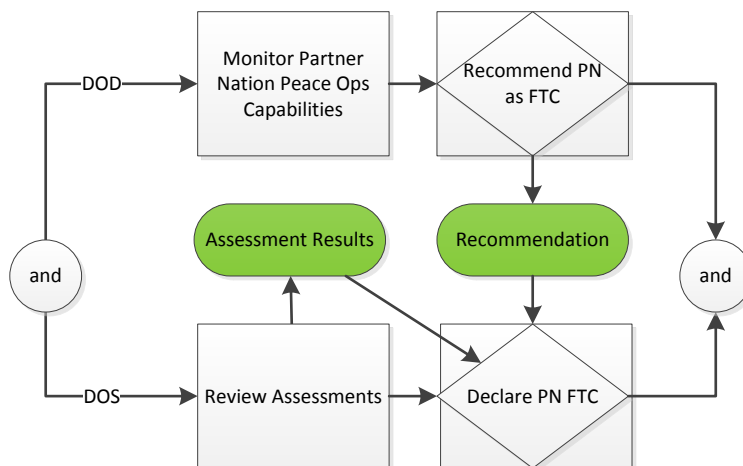


Figure 31. GPOI Assessments Interaction Model 3 of 3

3. Planning and Implementation

Figure 32 describes the flow from high level objectives to planning and implementation of GPOI activities. Program objectives are translated into guidance for the COCOM GPOI managers. That guidance is passed down to the Security Cooperation Office, which coordinates GPOI activities with the partner nation. The GPOI activities are monitored by the Security Cooperation Office and assessed, as shown in the previous GPOI Assessments interaction models. GPOI activities can be toward a standard peace operations capability or a United Nations “critical enabler” capability.

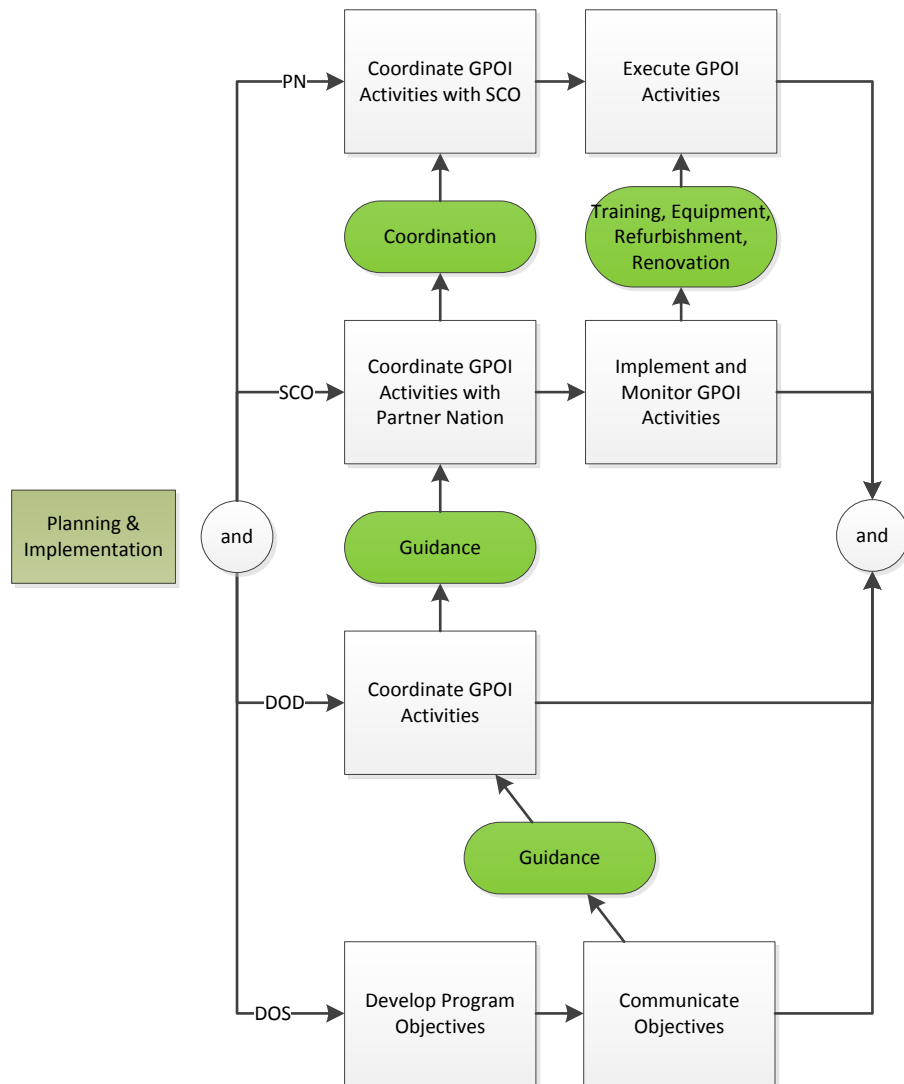


Figure 32. GPOI Activities Planning and Implementation Interaction Model

4. Peace Operation Deployments

Peace operation deployments involve interactions between the United Nations and the partner nations. Figure 33 describes the scenario in which the partner nation decides to develop a peace operations “critical enabler” capability, an advanced peace operations skill or ability identified by the United Nations. Examples of “critical enabler” capabilities include aviation, engineering, or medical capabilities.

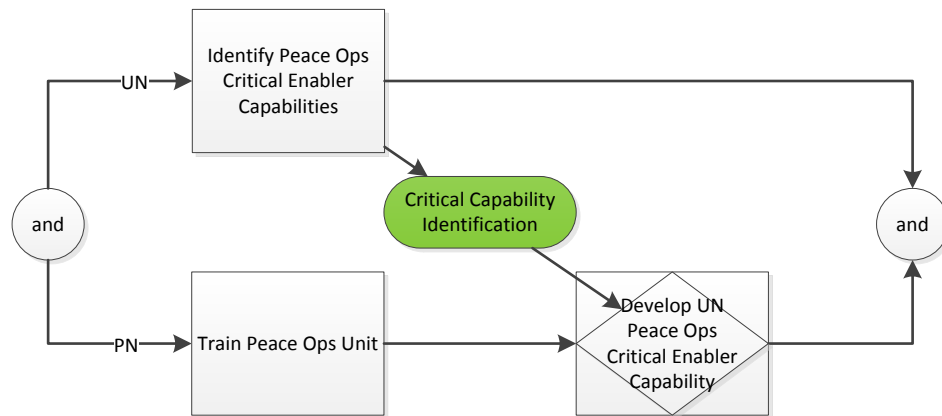


Figure 33. GPOI Peace Operations Capabilities Interaction Model

Peace operation deployments are negotiated between the partner nation and the United Nations. Only until a statement of agreement is signed between both parties does the partner nation deploy for a peace operation. The Peace Operations Deployment interaction model is depicted in Figure 34.

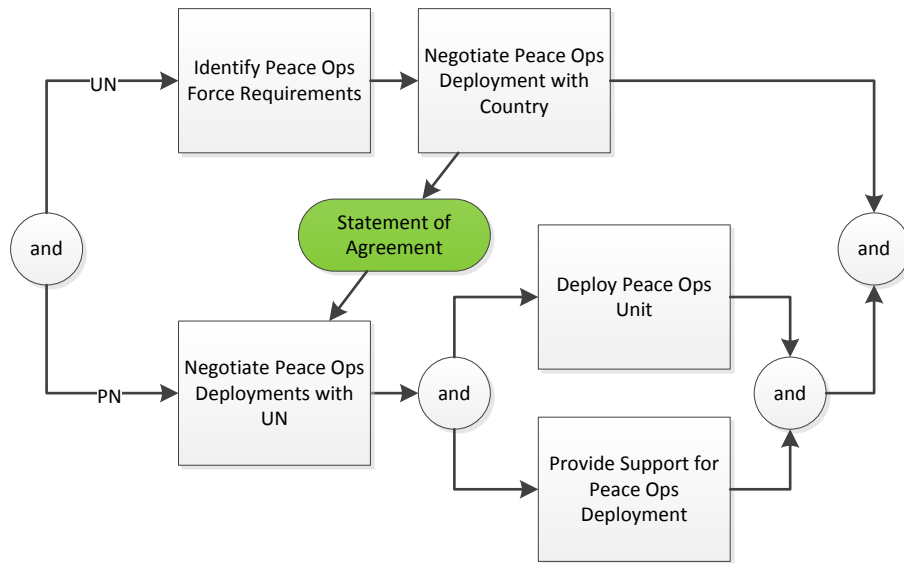


Figure 34. GPOI Peace Operations Deployment Interaction Model

After a partner nation successfully deploys a peacekeeping unit to a peace operation, the United Nations reimburses the partner nation. Figure 35 shows the reimbursement interaction between the United Nations and the partner nation.

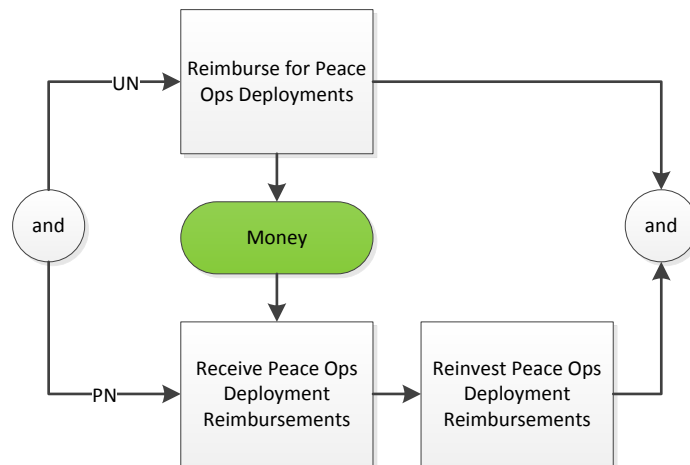


Figure 35. GPOI Peace Operations Reimbursement Interaction Model

E. GOVERNANCE

Governance is “the set of rules, policies, and decision-making criteria that will guide the [system of systems] to achieving its goals and objectives” (Vaneman and Jaskot

2013, 1). Proper governance of a system of systems can be determined by examining the characteristics of the system of systems and determining where each attribute falls on the on the spectrum of system of system characteristics. Using a method to determine governance introduced by Vaneman and Jaskot (2013), the behavior and interaction models of GPOI are assessed on the characteristics spectrum described in Chapter III.

1. **Autonomy**

GPOI has both conformance and independence qualities of autonomy. Toward the conformance end of the spectrum, the GPOI program office sets program objectives and assessment metrics, which are disseminated down through the COCOM GPOI managers and implemented by the security cooperation organizations. System of system objectives are the same. Assessment forms are the same. Plans for GPOI related activities, although generated at any level, must be approved by the program office and funding must be secured. Partner nations that are not progressing toward their peace operation capability goals may be discontinued from the program.

Toward the independence end of the spectrum, partner nations determine the level of peace operations capabilities their country desires to achieve. New GPOI partner nations tend to seek to develop an infantry unit with basic peacekeeping skills; seasoned GPOI partner nations may seek to develop advanced United Nations “critical enabler” capabilities. Additionally, each partner nation seeks deployment opportunities from the United Nations individually and deploy individually. What the partner nations do with reimbursements from deployments is decided by the leaders of that nation. Therefore, Figure 36 shows the autonomy characteristic for GPOI.



Figure 36. GPOI Autonomy

2. Belonging

The GPOI system of systems shares both centralization and decentralization qualities of belonging. Towards the centralization end of the spectrum, the GPOI program director is the decision maker for the GPOI system of system. The program office determines the program objectives, creates a standard assessments form, and allocates funding to the partner nations. Partner nations are subdivided into regions and managed by a COCOM GPOI manager based on their respective geographic locations. Assessments flow up to the centralized program office and are used in decision making. Finally, some fledgling partner nations have used an embedded training model by embedding peacekeeping units with a more capable partner nation to learn and gain experience in peace operations.

Toward the decentralization end of the spectrum, partner nations determine their specific peace operation capability goals. The training to meet these goals is conducted individually. Deployments are negotiated individually, and GPOI has no authority over what each partner nation does with their reimbursements for deployments. Figure 37 summarizes the belonging characteristic of GPOI.



Figure 37. GPOI Belonging

3. Connectivity

The GPOI system of systems contains more platform-centric than network-centric qualities of connectivity. Toward the platform-centric end of the spectrum, each partner nation has its own goals and own strategy for achieving their goals. The peace operation capabilities differ from one partner nation to another, with some nations having more skills and abilities than other nations. Funding is also unequally divided among the various COCOMs. There are also competitions between partner nations to negotiate

deployments with the United Nations, with more capable countries having more influence to sign an agreement.

Toward the network-centric end of the spectrum, GPOI objectives are the same throughout the program. The same basic training, equipment, and infrastructure support is available to each partner nation. In some instances, the embedded training model allows two partner nations to connect, learn, and mutually benefit from cross training. Figure 38 shows the connectivity characteristic for GPOI.

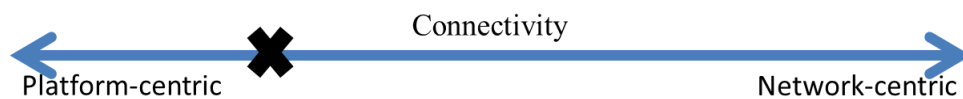


Figure 38. GPOI Connectivity

4. Diversity

The GPOI system of systems has more heterogeneous than homogeneous qualities of diversity. Toward the homogeneous end of the spectrum, the end state goal is the same for all stakeholders in the GPOI system of systems. When deployed, all peacekeeping forces fall under the banner of the United Nations. In training, the basic peace operation capabilities are very similar and the assessments are all standard. On cultural diversity of the partner nations, there are two dominant but similar languages are spoken in the region.

Toward the heterogeneous end of the spectrum, there is diversity in the individual partner nation peace operation capability goals, the path to achieve these goals, and the time to achieve these goals. There is diversity in the governments of the partner nations. The military members of the security cooperation organizations also frequently turn over their jobs every few years. Organizationally, the Department of State is run differently from the Department of Defense. Finally, the participation of each partner nation in GPOI is voluntary. Figure 39 displays the diversity characteristic for GPOI.



Figure 39. GPOI Diversity

5. Emergence

The GPOI system of systems has both foreseen and indeterminable qualities of emergence. Toward the foreseen end of the spectrum, the expectation from GPOI is a partner nation's capability to conduct peace operations. From assessments and feedback, capability should increase with GPOI support. After deployments, experienced peacekeepers incorporate their lessons learned into training new peacekeepers, thus increasing the partner nation's capability to conduct peace operations. Reimbursements for deployments are reinvested into the self-sustaining peacekeeping units.

Toward the indeterminable end of the spectrum, performance in deployments did not always match performance in training. In some cases, the annual FTC assessments may not have been accurate or representative of the actual peacekeeping capability of a partner nation. Because of this, funding is not always consistent. Some partner nations were not investing their reimbursements back into the peacekeeping units. In an extreme case, a partner nation refused to deploy after receiving GPOI training support and equipment. Figure 40 illustrates the emergence characteristic of GPOI.



Figure 40. GPOI Emergence

From this close examination of the characteristics, the type of governance and governance strategy can be developed. For GPOI, the resulting governance strategy should be for a collaborative system of systems, as shown in Figure 41. Systems within a collaborative system of systems are voluntary participants toward an agreed purpose. Such is the case with the partner nations, as they are voluntary participants in the GPOI

program to build a peace operation capability. However, GPOI also shares some elements of an acknowledged system of systems, as the GPOI program office acts as a designated system of systems manager and obtains resources for the system of systems. GPOI also has defined and recognized objectives.

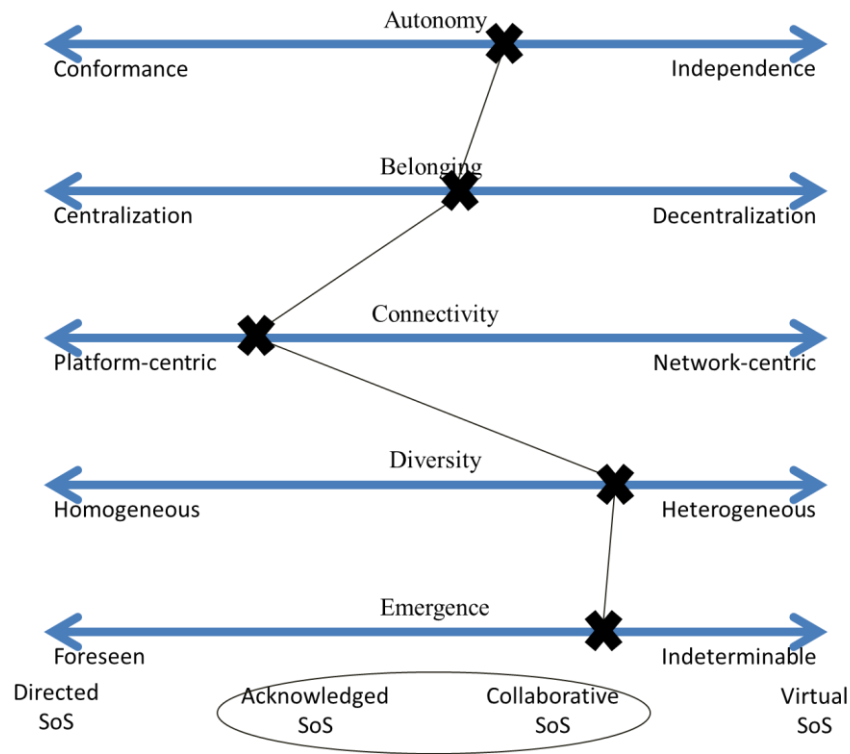


Figure 41. GPOI Governance

F. FRICTION POINTS

Friction points identify sources of conflict or areas of concern. These were determined from the stakeholder analysis, operational concept, event models, and interaction models.

1. GPOI Program Office

As head of the GPOI program, the GPOI program office has the most liability and influence over the success of GPOI. The decisions of the program director shape the

direction of the program. Additionally, the program office must justify GPOI to Congress. Two points of friction are examined.

a. High-Level Objectives

The GPOI program office must develop program objectives in line with national security objectives articulate these objectives effectively. As Figure 32 demonstrates, the implementers at the lowest levels need to understand the purpose of GPOI, the vision of the end state, and the path toward the end state as they conduct their assessments. These assessments are consolidated at the program office and used to monitor the progress of each partner nation toward peace operations capabilities. Thus, overall program progress toward GPOI objectives can be monitored and used as justification to Congress. The GPOI program office has the responsibility to develop and communicate the program objectives.

b. Traceability of Objectives to Assessment Metrics

The objectives developed by the GPOI program office are translated into meaningful metrics to be used in assessments. These metrics must measure the effectiveness of GPOI activities to meeting the end state. As seen in Table 3, the current annual assessments trace back to only the first of the seven Phase II objectives, which trace back to only the first major objective of GPOI. To generate appropriate assessment metrics, the end state must link to objectives, which must link to measures of effectiveness, which must link to measures of performance. Only if the metrics support the objectives and end state can the program office justify its existence to Congress.

2. COCOM GPOI Manager

The COCOM GPOI manager is in the unique position to enhance the GPOI program within his or her AOR. Although working within the COCOM, the COCOM GPOI manager does not work for the combatant commander. Figure 18 illustrates that the COCOM GPOI manager has access to both the program office (under the State department) and the combatant commander (under the Defense department). These are two major stakeholders for the GPOI program. Further, the COCOM GPOI manager

directly engages with the security cooperation organizations. The friction lies in the influence the COCOM GPOI manager has on the combatant commander.

The priority of GPOI to the combatant commander can either enhance or reduce the effectiveness of the program. The COCOM GPOI manager must show the combatant commander the opportunities afforded by the GPOI program. Foremost, GPOI gives the combatant commander access to countries that are traditionally opposed to a military-military relationship. A strong GPOI relationship may open the door to improved diplomatic and military cooperation. Without the support of the combatant commander, the program cannot be effective.

In the case of USSOUTHCOM, the GPOI program was an intermediate military objective in the Theater Campaign Plan; however, it was removed upon completion of all sub tasks. In reality, the completion of sub tasks does not complete GPOI—there is a sustainment phase that is required for continued success. By aligning one of the combatant commander's priorities with long term GPOI objectives, the COCOM GPOI manager creates unity of effort.

3. Security Cooperation Organization

The security cooperation organization is the critical link in an effective GPOI program. As implementers of GPOI activities, the security cooperation organization personnel observe and assess the peace operations capabilities of the partner nation. They conduct annual assessments and quarterly reports. They originate requests on behalf of the partner nation for training support and equipment. In coordination with the partner nation's leadership, they help shape the goals of the partner nation with respect to peace operations capabilities. Three points of friction for the security cooperation organization are examined.

a. Relationship with the Partner Nation

The level of involvement of the security cooperation organization with the partner nation directly correlates with his or her influence on the country's decision makers. This was determined from the stakeholder analysis. Security cooperation organization

embedded with the partner nation has a greater opportunity to build good relationship with the country's decision makers, more so than the security cooperation organization isolated in the U.S. embassy with little to no access to the partner nation. To develop effective peace operation capability goals, request the appropriate GPOI support and equipment, and to properly assess a partner nation's progress toward achieving their goals, the security cooperation organization requires good rapport with the partner nation.

b. Consistency of Reporting

A serious point of friction for the security cooperation organization is the lack of consistency of reporting, as described in the stakeholder analysis. As with any military billet, personnel turnover every few years, resulting in limited time available to build a relationship with the partner nation and little time to properly assess the partner nation's peace operation capabilities. In the case of the annual FTC assessment, essentially a new assessment of the partner nation is conducted every other year by personnel with different standards. This ends up negating the original baseline assessment and puts the accuracy of the actual assessments being conducted in question.

c. Priority of Assessments

Although under the command of the COCOM, the security cooperation organization works next to the U.S. Ambassador on a daily basis, illustrated in Figure 18. As a result, GPOI related tasks dictated from the COCOM (a continent away) may not be a priority for the security cooperation organization. GPOI is one of many tasks assigned to the security cooperation organization and assessments may be postponed particularly if overloaded with other tasks, thus reducing the quality of the assessments.

4. Partner Nation

The Partner nation may partake in the GPOI program for many different reasons, which will shape their goals toward, commitment to, and support for developing a peace operations capability and exercising this capability in actual peace operation deployments. Three sources of friction have been identified.

a. Training

A partner nation with an established peace operations capability may opt to use GPOI to develop a United Nations “critical enabler” capability, as described in Figure 25. However, most partner nations do not have a peace operations program and will start with basic capabilities such as a peacekeeping infantry company. With many nations vying to fulfil a role in peace operations deployments, partner nations with only an infantry peacekeeping capability will likely be unable to negotiate a deployment. Nations with an advanced peace operations capability are more competitive to secure a deal; however, it is much more expensive to develop and maintain advanced capabilities.

b. Deployment Process

Negotiations with the United Nations are an important part of the deployment process, as described in Figure 34. Typically, a country will solicit the United Nations as soon as a potential peace operation is identified. As a result, partner nations need a representative to the United Nations as advocates for their host country in the solicitation of deployment opportunities. There seems to be an incorrect assumption among some partner nations that the United States negotiates peace operation deployments on behalf of the partner nations. However, some partner nations simply do not appoint a direct representative to the United Nations. As a result, peacekeeping forces of partner nations miss many opportunities to deploy. Figure 18 shows the interconnected relationship between the partner nation and the United Nations.

c. Reinvestment

Once a deployment is secured and a partner nation deploys to a peace operation, the United Nations pays a reimbursement for their services, as described in Figure 35. As this is an issue between the partner nation and the United Nations, GPOI does not dictate what the partner nation does with that money but urges reinvestment toward advanced capabilities. As described in the stakeholder analysis, partner nations that reinvest into developing advanced capabilities develop a more robust and self-sustaining program. Unfortunately, some partner nations do not have a formalized interagency process to

account for these funds and the program suffers. This highlights the need for prerequisite criteria for acceptance into the GPOI program.

5. Governance

The governance examination of the GPOI program (Figure 41) revealed a mix of acknowledged and collaborative type management. Thus, a balanced governance approach is necessary. GPOI, with respect to the United States, operates as more of an acknowledged system of systems; GPOI, with respect to the partner nations, operates as more of a collaborative system of systems. Most characteristics seem to support a collaborative type system of systems, with the exception of the characteristic of connectivity. The connectivity between partner nations appears to be more platform-centric than network-centric.

This chapter defines GPOI as a system of systems and develops a system of systems operational architecture. From an analysis of major stakeholders, an operational concept was developed with major stakeholders acting as systems within a system of systems. The architecture is explained through the use of event models which describe the behavior of each system. Interactions models show the physical and informational exchanges between the systems. From these models, GPOI was revealed to be a mix of acknowledged and collaborative types of system of systems. Finally, friction points were identified with recommendations addressed in Chapter V.

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V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

The application of systems of systems engineering to Global Peace Operations Initiative (GPOI) provided a better understanding of the program from a holistic view. Each stakeholder acts as a system operating within the GPOI system of systems to create a new capability, which enhances international peace operations capacity. Based on the system of systems operational architecture models and an analysis of the interactions between systems in GPOI, the thesis research questions were addressed.

1. **Can the development of a model of the Global Peace Operations Initiative as a system of systems improve or enhance the operations assessment process of GPOI?**

This thesis concluded that a systems analysis of GPOI as a system of systems may both improve and enhance the operations assessment process of GPOI through an understanding of the behaviors of the constituent systems and the interactions between systems within the system of systems. Assessments are not conducted in a vacuum; systems interact with their environment and evolve over time. Thus a holistic examination of GPOI in its operational environment is required to fully understand what and how to assess. This systems analysis revealed a complex system of systems within GPOI in which the effectiveness of meeting objectives hinged on commitment from each constituent system.

2. **What does GPOI as a system of systems model reveal about the current GPOI assessments process?**

Analysis found a critical link at the security cooperation organization level, as described in the friction points from the previous chapter. A burden of the success of GPOI as a program lies on the implementers, who both implement GPOI-funded activities and generate the assessments of a partner nation's performance and progress toward building a peace operations capability. On the other end of the process, the GPOI program office must ensure the assessment documents use metrics that actually capture

the program's progress toward program objectives. Otherwise, the assessment is meaningless.

3. What system of systems characteristics may improve or enhance GPOI?

To model GPOI as a system of systems, a stakeholder analysis was conducted and an operational concept was defined, which were used to develop an operational system of systems architecture. GPOI was modeled as a system of systems using event models to capture system behaviors of each of the major stakeholder and interaction models to capture relationships between systems. This thesis examined the system of systems characteristics of autonomy, belonging, connectivity, diversity, and emergence. These characteristics provided insight into the type and governance of the GPOI system of systems. When plotted on the spectrum of system of systems characteristics, GPOI appears to fulfill parts of acknowledged and collaborative types of system of systems with a tendency toward decentralized autonomy, independence in belonging, platform-centricity in connectivity, heterogeneous diversity, and indeterminable emergence.

B. RECOMMENDATIONS

Using the stakeholder analysis and operational concept, event models and interaction models were created. An analysis of these models highlighted points of friction within the GPOI system of systems. From the points of friction identified in Chapter IV, the following recommendations are given to assist the GPOI program. These suggestions apply to the GPOI program within USSOUTHCOM, but may find some applications in other COCOMs.

1. Traceability of Objectives to Assessment Metrics

Once an end state is defined and program objectives are determined, each objective must trace down to sub-objectives, which must trace down to tasks, which must trace down to the tactical level activities. In the same way, metrics measured on the assessments must ultimately trace up to the objectives. As described in Table 3, current FTC assessment metrics measure progress toward only one of the three identified major objectives. The GPOI program office must clearly show the traceability of objectives to

metrics. As seen in Figure 29, the assessment documents are filled out by the security cooperation organizations and passed up to the GPOI program office, which is then used as justification to U.S. Congress. Figure 32 illustrates the link between high level program objectives down to the executed GPOI-related activities.

2. Combatant Commander Buy-in for Sustainability

As much of the GPOI program is implemented by the Department of Defense at the COCOM level, the full support of the combatant commander could greatly benefit the effectiveness of the program, as discussed in the previous chapter. As in the case of USSOUTHCOM, GPOI flourished as an intermediate military objective in the COCOM Theater Cooperation Plan. However, consideration to the sustainability phase of GPOI needs to be included. Figure 18 shows how the combatant commander's fits within the organization. The COCOM GPOI manager should sell the GPOI program to the respective combatant commander, who is at a position of direct operational control over the security cooperation organization. This can be accomplished by showing the benefits of the program and the reach that GPOI provides into areas not easily accessible through direct diplomatic or military channels.

3. Long Term Assessors

The frequent turnover of military personnel due to the nature of duty station rotations was identified as a friction point within GPOI. As such, consideration should be given toward establishing long term GPOI implementers. Longer tour of duty within a partner nation has a twofold benefit. First, establishing relations with partner nations takes time and a longer tour of duty allows the security cooperation organization to build and maintain rapport with the decision makers of the partner nation. Second, the annual assessments carry an artificial baseline due to the turnover of assessors. GPOI is a long term process which requires assessments over a long period of time. The same assessor over that long period of time provides a more assessment of the partner nation.

4. Network Centric Training

In the governance analysis, one characteristic of GPOI stood out from the others. Connectivity was identified as more platform-centric rather than network-centric. Increasing net-centricity for the partner nations may enhance the achievement of a self-sustaining peace operation capability, particularly for smaller and less developed countries. Similar to the embedded partnership training approach discussed in Chapter II, an open network-centric approach to training allows information and resource sharing between partner nations toward the achievement of advanced peace operations capabilities, which may mutually benefit all countries involved.

5. Partner Nation Formal Interagency Process

A formalized interagency process should help a partner nation ensure that proper support is provided to the peacekeeping units to build self-sustainable peace operations capabilities. Particularly in the case of reimbursements from the United Nations for peace operations deployments, GPOI has no control over where that money is used, which was identified as a friction point. A strong interagency process should provide some accountability and make certain that the money is reinvested into developing more advanced peace operations capabilities.

6. Partner Nation Representative to the United Nations

Without a representative to the United Nations, the partner nation is at a disadvantage in even starting negotiations with the United Nations, an identified friction point. With the competitive nature of the peace operations deployment negotiation process, partner nations need a direct representative to the United Nations. This representative will solicit the UNDPKO for an opportunity to deploy on a peace operation. With an increased chance of deployments, the partner nation has a better chance at benefitting from the experience and increasing the effectiveness of peace operations training.

C. FUTURE WORK

This thesis is part of a series of ongoing research at Naval Postgraduate School. While using systems of systems analysis to examine the behavior and relationship dynamics between systems to highlight important characteristics within the GPOI system, there are further areas for research to fully enhance GPOI assessments.

1. System Dynamics Model

The GPOI program could be modeled and simulated using system dynamics concepts to find the most influential factors behind the system of systems. A system dynamics model could also validate the system of systems architecture proposed in this thesis. Further, any recommendations could be simulated and analyzed by quantitatively measuring the effects of the changes on the system of systems. Additionally, the effects of external factors on the GPOI program could be examined more thoroughly. For example, social and economic factors of a partner nation may play a much more important role in the success of the GPOI program than previously anticipated. System dynamics could measure such a hypothesis.

2. Formal Assessment Metrics Development

The analysis conducted in this thesis was based on the early stages of the system of systems engineering and integration process model. The identification of specific metrics that accurately measure progress toward objectives is the next step and another research opportunity. Both quantitative and qualitative metrics that are meaningful need to be identified and assigned a weighted value of importance toward meeting objectives. Application of the model with metrics could be validated through dynamic modeling and implemented in an actual partner nation assessment.

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APPENDIX FULL TRAINING CAPABILITIES (FTC) ASSESSMENT

The Full Training Capability (FTC) Assessment of each partner nation is conducted annually by GPOI implementers. This standard assessment form was created by the GPOI program office. The following assessment document is an actual assessment of a partner nation. To protect personal identifying information, all names, dates, and locations have been changed.

Full Training Capability (FTC) Training Assessment

INSTRUCTIONS: Use the form below to conduct FTC baseline, annual and verification assessments. The following are instructions on how to fill out each portion of the form.

Contact Information: Use this space to fill out the assessor's complete contact information.

Desired End State: Use this space to identify the partner country's goal with regard to peace operations training capability and capacity. As FTC is meant to measure the partner country's capability to train peacekeeping units, the desired end-state should capture how many units and of what type the partner seek to train (not deploy) simultaneously. For example, a country that seeks to deploy four battalions may require the capacity to train two battalions simultaneously in order to sustain rotations of four battalions. In this example, the FTC desired end-state would be to train two battalions simultaneously, not deploy four battalions.*

Target Date of FTC Achievement: Use this space to convey the estimated fiscal year when the partner is anticipated to achieve their FTC desired end-state.*

Scoring: When filling out the scores in the form, rate the partner country on the basis of the identified target end-state. For example, if a country desires to be able to train one infantry battalion in peace operations tasks, the FTC scores should be determined on the basis of the partner's progress towards achieving this particular goal.*

Comments and Remarks: Assessors should provide justification in the comments and remarks that explain: (1) the rationale for the scoring, particularly if a score changes from one year to another; (2) what is needed to improve the score; and (3) whether there will be any anticipated improvements in a particular score in the out years based upon upcoming GPOI-funded or non-GPOI funded activities.*

***Note about Multiple Desired End-States:** If the country has more than one desired end-state then please use the numerical list to describe each of them in the space provide in the "Desired End-state(s)" section. Likewise, please use the numerical list in the "Target Date(s) of FTC Achievement" section to identify target dates of FTC achievement for each desired end-state.

If a country has more than one desired end-state, such as being able to train one engineer unit and one medical unit, then the scores in the FTC assessment should be disaggregated to reflect each of these individual target capabilities. Additional optional scoring fields for each question are available to allow assessors to score each desired end-state separately. Comments and remarks should also address each of the desired end-states.

Please note that if there are more than one desired end-state which represent distinct lines of effort with minimal overlap in terms of the criteria below, assessors may fill out separate assessment forms for each desired end-state.

Please complete this form and submit it to the State/PM GPOI Metrics and Evaluation Team point of contact by **June 20, 2014**. Upon receipt, the Metrics and Evaluation Team will review and may seek clarification on the responses.

Metrics and Evaluation Team POC: John Doe

Tel: 555-555-5555

Unclassified Email: johnndoe@state.gov

Classified Email: johnndoe@state.sgov.gov

Metrics and Evaluation Team Alternate POC: John Doe

Tel: 555-555-5555

Unclassified Email: johnndoe@state.gov

Classified Email: johnndoe@state.sgov.gov

Assessors should use these subjective ratings when completing the training capability assessment [provide explanatory comments for ratings of 1, 2, 3, 4, 5 or not applicable (NA)]:

- 1 – No
- 2 – To an extent; but significant limitations hinder meeting the requirements to achieve and sustain peace operations training self-sufficiency for military personnel
- 3 – To an extent, but there are some limitations which hinder meeting the requirements to achieve and sustain peace operations training self-sufficiency for military personnel
- 4: Yes, but some minor/moderate developments are needed in order to meet the requirements to achieve and sustain peace operations training self-sufficiency for military personnel
- 5 – Yes; fully meets the requirements to achieve and sustain peace operations training self-sufficiency for military personnel
- NA – Not applicable where a particular criteria may not be relevant for a particular country

REPORT INFORMATION		
Country: Partner Nation (PN)		
Report Submitted By: John Doe		Phone: 555-555-5555
Rank/Title: LTC John Doe		E-Mail: johndoe@defense.mil
Organization: PARTNER NATION		Assessment Date(s): 20 June 2014
<p>Desired end-state(s). Describe in terms of capacity and capability (e.g., train one infantry battalion in peace operations tasks). If there is more than one desired end-state,(e.g., one engineer company and one medical platoon), please list them separately:</p> <ol style="list-style-type: none"> 1. To develop the capability of PN National School for Peacekeeping Operations (ENOPN), responsible to conduct PSO training and as such, to increase its trainer cadre and facilities capacities. 2. To develop the capability of field training area in order to support the two PN Infantry Battalion peacekeeping contingency forces and as such, increasing the capacity of its training facilities and equipment. 		
<p>Target Date(s) of FTC Achievement. If there are multiple desired end-states, please list target dates of FTC achievement separately based on each desired end-state, i.e., one engineer company – FY 2014; one medical platoon – FY 2015:</p> <ol style="list-style-type: none"> 1. The desired end-states to develop the capability of PN National School for Peacekeeping Operations capacities is FY2015. 2. The desired end-states to develop the capability for field PKO training area extend beyond FY 2015. 		
REPORT CHECKLIST		
<p>Please use the “Score 1 (required)” drop down field for each question to score the country based on the desired end-state. If there are multiple desired end-states, please use the additional optional drop down fields to score each one separately. Please provide comments and/or remarks to explain the scores.</p>		
CRITERIA 1 – NATIONAL PEACE OPERATIONS TRAINING CENTER AND CADRE		
The existence of a dedicated trainer cadre, assigned to a national training center.		
KEY QUESTIONS		ASSESSMENT SCORE
1.1	<p>Does the country have one or more national training centers responsible for the conduct of peace operations training? [Please provide training center name(s) and location(s)]</p> <p>Comments:</p> <p>PN has one National School for Peacekeeping Operations – The training center name is Escuela Nacional de Operaciones de Partner Nation (ENOPN) located in PN City. The training center shares the auditorium with the “PN SCHOOL”. There is no data of how much benefit or disadvantage ENOPN has from the shared facilities.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
1.2	Does the country have a dedicated trainer cadre assigned	4 - Yes; minor/moderate

	<p>to the training center?</p> <p>Comments:</p> <p>Comments: The ENOPN's Academic Department has available two permanent cadre positions dedicated to provide instruction to all armed forces service members selected to deploy every nine months on PKO. The Cadre is also responsible for administrative, personnel, logistics, finance, and operational activities; consequently decreasing available time for academic preparation and execution, hampering the quality of instruction. ENOPN has available 160 external instructors that might be used to augment instructions, however they lack of adequate PSO training and experience.</p>	<p>developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
Additional Remarks:		
<p align="center">CRITERIA 2 – CADRE RESOURCES</p> <p align="center">The trainer cadre is trained and resourced to conduct individual training courses, staff training, and unit training in accordance with tasks and associated training standards in UN training materials or national field manuals (for tactical tasks) and UN training standards (for non-tactical tasks) at a home base or through mobile training.</p>		
KEY QUESTIONS		ASSESSMENT SCORE
2.1	<p>Does the trainer cadre use relevant national field manuals or UN training materials (for tactical tasks) and UN training/education materials (for non-tactical tasks) for the units/individuals trained?</p> <p>Comments:</p> <p>Cadre has available relevant national field manuals and UN training/education materials. The training modules created by the UN offer a standardized PSO approach. Publications and multimedia resources aimed at supporting general education efforts are available on Internet. However, ENOPN needs to develop capacity to execute detailed and coordinated training scenarios. The current training team of two ENOPN instructors/administrators is inadequate. Based on feedback from an ODC member who participated in a recent ENOPN course, tactical and non-tactical training fell short because the instructors did not develop adequate training scenarios.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
2.2	<p>Is tactical training conducted in accordance with the training standards found in these manuals?</p> <p>Comments:</p> <p>The Center takes both a theoretical and hands-on approach to training through classroom lectures, and field tactical training. Nevertheless, tactical training fell short because cadre did not develop adequate tactical training scenarios in support of appropriate training objectives.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
2.3	Is non-tactical education and training conducted in accordance	4 - Yes;

	<p>with UN training standards, as appropriate?</p> <p>Comments: Lack of developed adequate training scenarios to support appropriate tasks in peacekeeping missions hindered a more realistic accomplishment of UN training standards.</p>	<p>minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
2.4	<p>Is the trainer cadre, by training and/or experience, qualified to conduct individual, staff, and unit-level peace operations training required by the partner country?</p> <p>Comments: The two ENOPN instructors have extensive PSO experienced and are well qualified to conduct individual, staff, and unit-level PSO training. However, due to short of personnel and overwhelming administrative and logistics tasks, the instructors have difficulties in organizing and preparing for the execution of the courses. This shortfall was observed by the ODC participant and a foreign student who is familiar with his own country's PKO training program expressed concern in the preparation for each class by the instructors. During the course another trainee expressed that the final exercise was not effective and poorly executed.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
2.5	<p>Is the trainer cadre capable of developing lesson plans or programs of instruction for the training (individual, staff, and unit) to be conducted?</p> <p>Comments: The cadre is capable of developing lesson plans and programs of instruction for the training, but, overwhelming administrative duties difficult at the best to develop of quality lesson plans.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
2.6	<p>Does the trainer cadre effectively lead, in accordance with their military's methods of instruction (MOI), the conduct of <u>lecture-based</u> instruction on the tactical tasks found in relevant reference manuals and the non-tactical tasks found in UN peace operations educational/instructional materials?</p> <p>Comments: The cadre is capable of developing lesson plans and programs of instruction for the training, but, overwhelming administrative duties difficult at the best to develop of quality lesson plans.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
2.7	<p>Does the trainer cadre effectively conduct training in accordance with their MOI for <u>performance-oriented training</u> on the peace operations-related tactical tasks found in relevant reference manuals?</p> <p>Comments: The trainer cadre use relevant national field manuals or GPOI Peace Support Operations Reference Manuals.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p>

		Score 3 (optional)
Additional Remarks:		
CRITERIA 3 – OVERALL TRAINING CENTER INFRASTRUCTURE The training center writ large (classrooms, field training areas, support facilities, etc.) has sufficient infrastructure to include potable water; sewage and drainage systems; primary and secondary power generation; lighting; a supply center; fuel storage; a communications system; maintenance capabilities; and adequate roads.		
KEY QUESTIONS		ASSESSMENT SCORE
3.1	Is potable water available and accessible within the training center? Comments: ENOPN has fully self-sufficient and independently potable water.	5 - Yes; fully meets the requirements Score 2 (optional) Score 3 (optional)
3.2	Are there fully functional sewage and drainage systems within the training center? Comments: ENOPN have fully self-sufficient and independently sewage and drainage systems.	5 - Yes; fully meets the requirements Score 2 (optional) Score 3 (optional)
3.3	Is there an adequate primary and secondary power generation source within the training center? Comments: ENOPN have fully self-sufficient and independently primary power generation source; but, doesn't have secondary power generation systems.	4 - Yes; minor/moderate developments needed Score 2 (optional) Score 3 (optional)
3.4	Do training locations within the training center have sufficient lighting in all indoor spaces? Comments: ENOPN have sufficient and adequate lighting in all indoor training spaces.	5 - Yes; fully meets the requirements Score 2 (optional) Score 3 (optional)
3.5	Does the training center have a supply center for all classes of supplies? Comments: ENOPN doesn't have a supply center for all classes of supplies to support its mission in a timely and effective way such as stocking and replenishment.	Score 1 (required) 2 - to an extent; with significant limitations Score 3 (optional)
3.6	Does the training center have a safe location for the storage of fuel? Comments: N/A	NA - not applicable or relevant Score 2 (optional)

		Score 3 (optional)
3.7	<p>Does the training center have a communications system (i.e., landline telephone system or backup radio system) to allow effective communication between headquarters and field sites?</p> <p>Comments: ENOPN has a landline telephone system, but not a backup radio system to allow effective tactical communication between school center and field sites.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
3.8	<p>Does the training center have an adequate maintenance capability available for vehicles, radios, installation, and other types of equipment (e.g., motor pool with a hardstand, drainage, overhead cover, lighting, and security fencing, vehicle recovery; radio repair site; local contracting support; etc.)?</p> <p>Comments: Due to the nature of on-site mission, ENOPN facility does not have the requirement for dedicated maintenance infrastructure or personnel to run a motor pool for vehicles, radios, and other types of equipment. Any requirements for maintenance of vehicles or equipment will be coordinated with off-site PN Army maintenance unit.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
3.9	<p>Are there adequate roads for transporting personnel and equipment to and from the training center and for all training locations within the training center?</p> <p>Comments: For ENOPN N/A</p>	<p>NA - not applicable or relevant</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
Additional Remarks:		
<p align="center">CRITERIA 4 – TRAINING SUPPORT FACILITIES AND EQUIPMENT</p> <p align="center">Training support facilities have adequate indoor training areas; office spaces; accommodations; vehicles; and field training areas to effectively support peace operations training.</p>		
KEY QUESTIONS		ASSESSMENT SCORE
CLASSROOM TRAINING SPACES		
4.1	<p>Is there available, appropriate, and adequate instructional space such as classrooms, auditoriums for individual training courses (e.g., seating, tables/desks, basic audio/visual capabilities, whiteboards/blackboards, television monitors, lighting, heating, ventilation)?</p> <p>Comments: ENOPN has available classroom space for individual training</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p>

	courses and one auditorium. However, because the school has expanded its curriculum and now it's offering local and international PSO engagements, the available training space is inadequate.	Score 3 (optional)
4.2	Is there available, appropriate, and adequate instructional space for staff training (e.g., seating, tables/desks, basic audio/visual capabilities, whiteboards/blackboards, television monitors, lighting, heating, ventilation)? Comments: ENOPN does not have adequate and technically equipped instructional space for staff training; they lack classrooms with basic audio/visual capabilities such as whiteboards, television monitors connected to Cable or Direct TV.	Score 1 (required) 3 - to an extent; some limitations Score 3 (optional)
4.3	Are appropriate training aids and materials available to facilitate classroom-based training activities (e.g., maps, graphic training aids)? Comments: Training aids and materials to facilitate classroom-based training activities are limited; there are no wall maps, or graphic training aids. The training aids and materials available are on line to use as power point presentations.	4 - Yes; minor/moderate developments needed Score 2 (optional) Score 3 (optional)
Additional Remarks:		
FIELD TRAINING AREAS		
4.4	Are field and other outdoor training areas available and adequate to conduct performance-oriented training on all required tactical tasks for the required unit type (e.g., marksmanship and live fire range facilities, situational training lanes, available maneuver space)? Comments: PN Training Facility is a training facility which requires significant improvements to conduct performance-oriented training on all required critical tactical tasks for the required PKO unit type. Installation lacks of adequate training areas for Weapon Training: small arms up to high cal. weapons, firing ranges, live fire tactical convoy lane, and MOUT sites.	2 - to an extent; with significant limitations Score 2 (optional) Score 3 (optional)
4.5	Are appropriate training aids and materials available to facilitate field training activities (e.g., medical training aids/dummies, graphic training aids, barrier materials)? Comments: The field training area lacks of Equipment Visual Simulators to perform Anti-tank training and indoor Primary Marksmanship. Training aids and materials to facilitate field training activities are limited; there are non innovative medical training aids/dummies or graphic training aids to perform First Aid	2 - to an extent; with significant limitations Score 2 (optional) Score 3 (optional)

	training, TCCC, or Combat Lifesaver training.	
4.6	<p>Are appropriate safety standards applied and enforced at training areas/ranges (policy notices/emergency procedures, range flags or similar warning aids)?</p> <p>Comments: The unit Commander and First Line leaders enforce safety, not necessarily at US standards. ENOPN and PN training center do not have adequate medical facility on-site. During field training, they operate with an on-site Ambulance and qualified medical personnel.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
4.7	<p>Are there adequate areas to provide classroom type instruction in the field (e.g., a protected and lit sand table area for lanes training)?</p> <p>Comments: No adequate areas are available to provide classroom type instruction in the field. Normally classroom type instruction is performed at installation facilities then hand-on training at field.</p>	<p>2 - to an extent; with significant limitations</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
4.8	<p>Can trainees be adequately fed in the field (e.g., field mess/catering/box lunches, field rations)?</p> <p>Comments: PN Training Facility rural barracks has available a kitchen but no dining facility. Units deliver food using field gear and internal transportation.</p>	<p>3 - to an extent; some limitations</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
4.9	<p>Are field latrines or field sanitation procedures available or established?</p> <p>Comments: Not observed.</p>	<p>NA - not applicable or relevant</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
4.1 0	<p>Are lighting and power generation available at field sites?</p> <p>Comments: PN Training Facility rural field site has no available portable lighting and power generation. These items are most need it at contingency deployment mob station and logistics configuration sites rather than field training areas.</p>	<p>2 - to an extent; with significant limitations</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
Additional Remarks:		
OFFICE SPACES		
4.1 1	<p>Is adequate office space available for the trainer cadre and support staff, either on- or off-site, that is furnished with phones, computer equipment (e.g., computers, printers, scanners, power supplies), fax machines, and copiers as appropriate for activity planning, curriculum development and administrative duties?</p>	<p>3 - to an extent; some limitations</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>

	<p>Comments:</p> <p>ENOPN has no adequate and technically equipped office space for staff. Because they are sharing their training center with PN SCHOOL, the center has inadequate office space available for the trainer cadre. There are no individually assigned computers work stations with internet access. They only have 5 computers with internet access for all to use as first in first serve basis.</p>	
4.1 2	<p>Is office space adequately furnished (e.g., chairs, tables/desks, filing cabinets/drawers, bookcases, whiteboards, lighting, and basic office supplies) to enable activity planning, curriculum development and administrative duties?</p> <p>Comments:</p> <p>ENOPN has significant challenges and inadequate furnished office space. The schools lacks of modern infrastructure facilities and educational training aids to enable activity planning and curriculum development. Potential areas for improvements are: Long distance learning, smart boards, and access to internet for all cadre and students simultaneously. The current situation has demonstrated slowed down on activity planning, curriculum development and administrative duties.</p>	<p>2 - to an extent; with significant limitations</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
4.1 3	<p>Does office space provide internet access, at least for the trainer cadre and planning staff?</p> <p>Comments:</p> <p>They have only 5 computers with internet access for all to use as first in first serve basis.</p>	<p>2 - to an extent; with significant limitations</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
Additional Remarks:		
ACCOMMODATIONS		
4.1 4	<p>Are adequate accommodations available for the trainer cadre, as required (e.g., facilities with appropriate heating, ventilation, lighting, bedding, and storage space)?</p> <p>Comments:</p> <p>ENOPN have available six rooms for accommodations; an inadequate quantity to support the trainer cadre, students, and or guest visitors.</p>	<p>3 - to an extent; some limitations</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
4.1 5	<p>Are adequate accommodations available for housing trainees (e.g., facilities with appropriate heating, ventilation, lighting, bedding, and storage space)?</p> <p>Comments:</p> <p>ENOPN have available six rooms for accommodations; an inadequate quantity to support the trainer cadre, students, and or guest visitors.</p>	<p>3 - to an extent; some limitations</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>

4.1 6	Does the training facility have adequate restroom and shower facilities available? Comments: ENOPN Not observed	NA - not applicable or relevant Score 2 (optional) Score 3 (optional)
4.1 7	Does the training facility have adequate kitchen facilities available (or alternate means such as catering available)? Comments: There is a kitchen facility available at ENOPN, but due to increased international and local PKO mission, ENOPN has potential for continuing refurbishes and improvement of its installation facilities to include the kitchen.	4 - Yes; minor/moderate developments needed Score 2 (optional) Score 3 (optional)
4.1 8	Does the training facility have adequate dining facilities available? Comments: There is an adequate dining facility available at ENOPN, but due to increased international and local PKO mission, ENOPN has potential for continuing refurbishes and improvement of its installation facilities to include dining facilities.	4 - Yes; minor/moderate developments needed Score 2 (optional) Score 3 (optional)
4.1 9	Does the training facility have adequate medical facilities available (on- or off-site, including ambulance support to/from field sites)? Comments: ENOPN doesn't adequate medical facility on-site. However several hospitals at PN City are at close proximity.	4 - Yes; minor/moderate developments needed Score 2 (optional) Score 3 (optional)
4.2 0	Does the training facility have adequate laundry facilities available? Comments: Not observed	NA - not applicable or relevant Score 2 (optional) Score 3 (optional)
Additional Remarks:		
VEHICLES		
4.2	Are sufficient transportation and material handling equipment assets available to support and facilitate training events (e.g., transport personnel, supplies and equipment to/from training facility to field sites)? Comments: School and units use internal transportation access such as:	5 - Yes; fully meets the requirements Score 2 (optional) Score 3 (optional)

	Wheeled armored personnel carrier, 12 PAX Vans, Land Rover Defender, and others to support and facilitate training events.	
Additional Remarks:		
CRITERIA 5– PROGRAMS OF INSTRUCTION Training is guided by written programs of instruction, ideally available in the country's dominant national language(s), which address all peace operations-relevant mission essential tasks.		
KEY QUESTIONS		ASSESSMENT SCORE
5.1	Does a written program of instruction (POI) exist, which addresses all of the individual, staff, and unit tasks to be trained? Comments: In accordance with ODC IRT's Assessment: "The school was much disorganized and not prepared for the execution of the course. ENOPN staff failed to provide clear course requirements and course schedules to the students. Instructors arrived with little original work involved in their presentations and very little "expert exchange" took place between the instructors and the students. The course failed to provide a professional means for preparation to a deployment in peacekeeping operations. The English language limited classroom discussion to a minimal number of students and limited the learning environment. The final exercise culminated with the loss of 18 hours valuable time. The execution of the scenario was very basic and failed to test any aspect of the course material. The final exercise also failed to provide any type of training for those who participated in the Staff Course. "	3 - to an extent; some limitations Score 2 (optional) Score 3 (optional)
5.2	Is the POI written in a language (or languages) that the trainer cadre understands? Comments: In accordance with ODC IRT's Assessment: "The English language limited classroom discussion to a minimal number of students and limited the learning environment." English deficiencies continue to be a challenge to adequately train and sustain PN peacekeepers. GPOI has contributed to improve the output English speakers by donating DLI English Lab to PN Army Language School located in PN City. This project should be expanded to other remote Army units located in central and borders of PN's Departments.	4 - Yes; minor/moderate developments needed Score 2 (optional) Score 3 (optional)
5.3	Is the POI based on tasks and training standards outlined in the relevant national field manuals or UN training materials (tactical tasks) and UN training and educational training	5 - Yes; fully meets the requirements

	<p>materials (non-tactical tasks)?</p> <p>Comments:</p> <p>ENOPN and Army units, in addition to use the UN manuals they use other documents to obtain guidelines and standards:</p> <ul style="list-style-type: none"> • Mission Mandate, Memoranda of Understanding, Status of Forces Agreement and Rules of Engagement. • Statement of Force/Unit Requirement issued by OMA. • Mission Concept of Operations, Operational Directives and Orders, Operational Plans, SOPs and mission-specific case studies, etc. • Generic Guidelines for Troop-Contributing Countries Deploying Military Units (2012), the COE Manual 2011 and Guidelines on the Peacekeeping Training (2011). 	<p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
Additional Remarks:		
<p style="text-align: center;">CRITERIA 6 AFTER ACTION REVIEWS</p> <p style="text-align: center;">A process exists for conducting after-action reviews and integrating lessons learned/best practices into training instruction.</p>		
KEY QUESTIONS		ASSESSMENT SCORE
6.1	<p>Does the partner have an institutionalized process for systematically conducting after-action reviews (AAR)?</p> <p>Comments:</p> <p>ENOPN has process for conducting after-action reviews (AAR) and keep records of lesson learned, however, armed forces services (Army, Navy, and Air Force) are not sharing among themselves their lesson learn.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
6.2	<p>Are lessons-learned and best practices captured among all ranks, from the brigade/battalion level down to at least the platoon level?</p> <p>Comments:</p> <p>ENOPN has process for conducting after-action reviews (AAR) and keep records of lesson learned. In addition to the UN Lessons Learned Studies available on Internet; is responsibility of Commander brigade/battalion level down to at least the platoon level to seek for this information.</p>	<p>5 - Yes; fully meets the requirements</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
6.3	<p>Does the partner have an institutionalized process to systematically compile AARs into lessons-learned or best practices documents?</p> <p>Comments:</p> <p>In addition to the UN Lessons Learned Studies available on Internet, ENOPN has an institutionalized a process to</p>	<p>5 - Yes; fully meets the requirements</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>

	systematically compile AARs into lessons-learned.	
6.4	<p>Does the partner have an established repository, such as a library or electronic files, where lessons learned and best practices documents can be stored and accessed?</p> <p>Comments: ENOPN has an established repository hard copy library and electronic files, where lessons learned and best practices documents are stored; but the school does not have the capability and capacity to upload lessons learned and best practices documents on their web page.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
6.5	<p>Are the compiled lessons-learned and best practices documents systematically integrated into the POI for subsequent training events?</p> <p>Comments: Due to short of personnel and overwhelming administrative and logistics tasks, the two instructors have difficulties to systematically and consistently integrate lessons-learned and best practices documents into the POI.</p>	<p>4 - Yes; minor/moderate developments needed</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
6.6	<p>Are the compiled lessons-learned and best practices documents demonstrably referenced during subsequent AARs?</p> <p>Comments: ENOPN ensures all PKO military personnel are aware of the DPKO Knowledge Sharing Policy and subsequent AARs integration.</p>	<p>5 - Yes; fully meets the requirements</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
Additional Remarks:		
<p style="text-align: center;">CRITERIA 7</p> <p style="text-align: center;">The partner country demonstrates the will and ability to sustain all of the above characteristics.</p>		
KEY QUESTIONS		ASSESSMENT SCORE
7.1	<p>Has the government demonstrated the will to support national peace operations-training?</p> <p>Comments: PN City Training Center - No. On 4 Sep 2012, Minister John Doe overturned the Vice-minister's decision on the construction of a \$750K PKO training center in PN City. This is an indicator of inconsistent support to National PSO. Such political consideration from the PN government has demonstrated unpredictable desire to support PN high visibility PSO-training and engagements.</p>	<p>2 - to an extent; with significant limitations</p> <p>Score 2 (optional)</p> <p>Score 3 (optional)</p>
7.2	<p>Has the government demonstrated the ability to sustain the characteristics listed above (Criteria 1-6)?</p> <p>Comments:</p>	<p>2 - to an extent; with significant limitations</p>

	Political will and fiscal constrain and normal personnel attrition rate are impacting their ability to sustain current level PSO force generation. Lack of adequate PSO field training facilities, classroom space, and derisory Army funding to maintain and sustain their current field training PKO facilities are negatively impacting PN progress in PSO.	Score 2 (optional) Score 3 (optional)
Additional Remarks:		

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